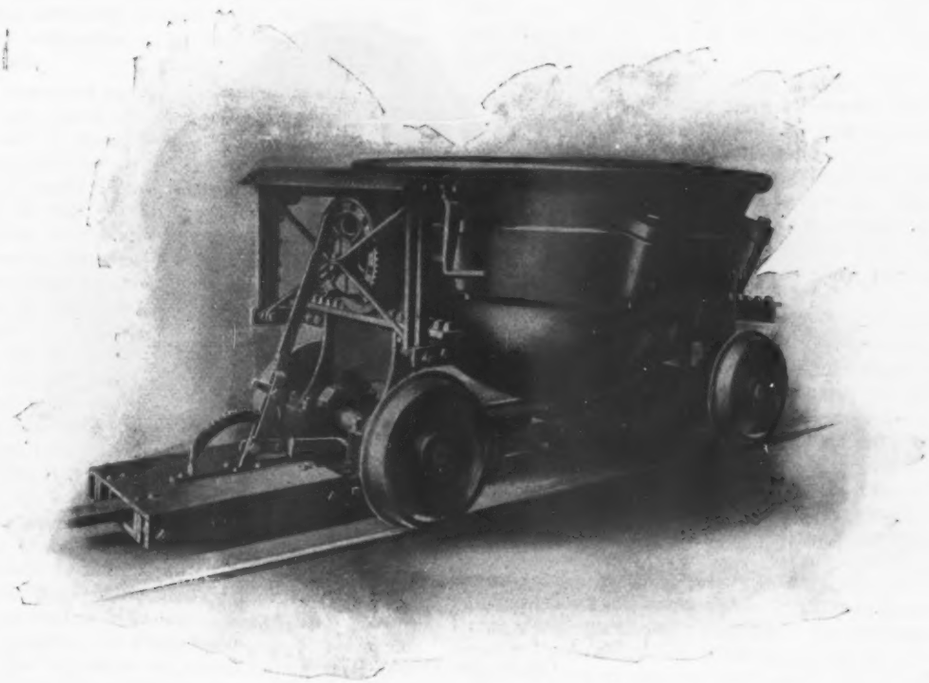
# THE IRON AGE

THURSDAY, JULY 3, 1902.

## The Treadwell Slag Car.

We here present two views of a 6-ton standard gauge slag car built at the Lebanon, Pa., works of M. H. Treadwell & Co., 95-97 Liberty street, New York. The construction is such that the ladle can be readily turned so as to discharge its contents on either side, and as far away from the track as possible. The operating mechanism is simple, and of such design as to eliminate danger of breakdown. In racking the car the operator turns the crank which revolves the worm engaging the worm wheel, which is mounted on the forward trunnion. This completely tilts the car, as shown in Fig. 2, and at the same time, by means of a rack and pinion at each trunnion, moves it either to one side or the other. Both the worm and worm wheel are cut, the former being made from a solid steel bar. The truck is built of structural steel. The entire car, with the exception of the wheels and brasses, is of steel. The wheels are chilled cast iron. The bowl and bail are made of cast steel, and are bolted together as shown. A brake, operated by the long lever shown in front, locks the car securely in position.



THE TREADWELL SLAG CAR.

## The Machinists' Trouble at Worcester.

WORCESTER, MASS., June 30, 1902.—The Prentice Bros. Company brought a bill in equity in the Superior Court at Worcester to-day, asking for an injunction restraining strikers from picketing the company's premises on Cambridge street, and Judge Francis A. Gaskill issued a temporary injunction as prayed for "restraining the respondents from patrolling the streets in front of or near the premises of the complainant and from detaining, threatening, assaulting, intimidating or in any way attempting to intimidate the employees, or in any way interfering with the conduct of the business of the plaintiff." The action was brought by Prentice Bros. because of the presence of 14 pickets in front of the company's shop this morning, which compelled officers of the company to go into the street and escort their workmen, especially returning strikers, into the shop. Other employers who have strikes on their hands will take similar steps unless picketing is abandoned. Up to a few days ago picketing had languished, little or none of it being done. But the strikers began to return to their work. In the past three days 26 of the Prentice Bros. Company's strikers have returned to work. The F. E. Reed Company, P. Blaisdell & Co., the H. C. Fish Machine Works, Woodward & Powell Planer Company and Whitcomb Mfg. Company have all got some of their striking machinists back again. The leaders of the strike are consequently employing desperate measures to keep up the courage of their men, and the strong force of pickets is a result.

The general strike of the Worcester carpenters employed on buildings and in builders' finish shops has completely collapsed, the strikers gaining absolutely nothing in the contest. This has done a good deal toward taking the heart out of the machinists' strike, which before had little left, excepting the power of the leaders over the men.

At the rate the machinists have been returning to work during the past few days the shops where strikes are in progress will be up to full working capacity shortly, although it is doubtful if any of them, with the exception of the Prentice Bros. Company and the F. E. Reed Company, will take on many new hands for the present, new men having been employed to replace strikers. The quiet season is at hand, made quieter than normal as a result of the strike. J. N.

Under date of June 20 the Treasury Department has rendered a decision in the drawback on continuous rail joints manufactured by the Albany Iron Works of Troy, N. Y., for account of the Continuous Rail Joint Company of America from wholly imported steel billets. In liquidation, the quantity of imported steel billets which may be taken as a basis for allowance of drawback may equal the weight of the exported merchandise, as declared in the drawback entry, after official verification, to which may be added 10 per cent. of such weight to compensate for loss in manufacture.

## Central Pennsylvania News.

HARRISBURG, PA., July 1, 1902.—In spite of strenuous efforts to relieve the shortage of the coal supply in this part of the State many of the works are inconvenienced and last week suffered from the slowness with which the fuel was served. Some works had to close departments for a day or so, and just now, when every one is rushing to fill up orders, this state of affairs is disquieting, especially when no one seems to know what will be the outcome of the threatened strike in soft coal regions. The bituminous region of this State is not affected yet, but coal cannot be gotten from it fast enough, and if there is any curtailment of output great annoyance and some suspensions must ensue.

It is now hoped that Central Pennsylvania has passed its period of labor troubles. In Lancaster and Lebanon counties the works have generally resumed, one mill at Lebanon being still in partial idleness, its rolling mill men having rejected an offer from the management. It is hoped to settle the trouble soon. The furnaces in the Lebanon district are working, with two exceptions.

At Reading the coal strike and labor troubles affect the trade's operations. The Empire Steel & Iron Company have blown out two stacks in Berks County, only a few of their furnaces being in activity at present in that part of the State. The Thomas Iron Company are also feeling the strike. The Schuylkill furnaces are using coke and are generally in operation now.

The works in this city were very busy during June, probably the largest shipments of the year having been made by the Central Iron & Steel Company. The Pennsylvania Steel Works were also exceedingly busy, except in a few departments retarded by lack of coal and material. Some of the new departments will be put into operation soon. The Harrisburg Foundry & Machine Works are working a large force at night.

It is stated that instead of the Jeannesville Iron Works being removed they will be enlarged and a larger force employed in a short time.

The Pennsylvania Fire Proofing Company of St. Mary's have been chartered here. They have a capital of $150,000 and E. D. Carter of Erie is treasurer.

There are men at work overhauling the works of the Pottsville Iron & Steel Company at Pottsville, which have been idle since 1893. It is stated that Pioneer Furnaces are to be repaired and started and the rolling mill and steel works put into operation. The new company are not announced, but last week there was satisfied a mortgage of $217,000 and another will be satisfied in a few days. Many men have been put to work and there will be some operations started soon if no very extensive repairs are found necessary. The old foundry and machine shop are also being repaired for starting.

Chester Works are busy and there are rumors that a new works will be added to the many at that busy place. It is currently reported that the plant of the Delaware River Steel Company will be located at that place and that Chester Works will be in the American Steel Foundry Company and that some enlargements will take place. Some changes in the shipyards are also expected.

### Many New Corporations.

During the month of June there were 135 corporations chartered at the State Department of Pennsylvania, of which the following were iron and steel manufacturing concerns:

Jones & Laughlin Steel Company, Pittsburgh; capital, $10,000. Directors: B. F. and W. M. Jones, Willis L. King, J. B. and I. B. Laughlin, Pittsburgh.

William Schofield Company, Manyunk, Philadelphia; capital, $30,000. Directors: Charles and Harriet Schofield, S. and M. A. Waldeck and Eva S. Hodson, Philadelphia.

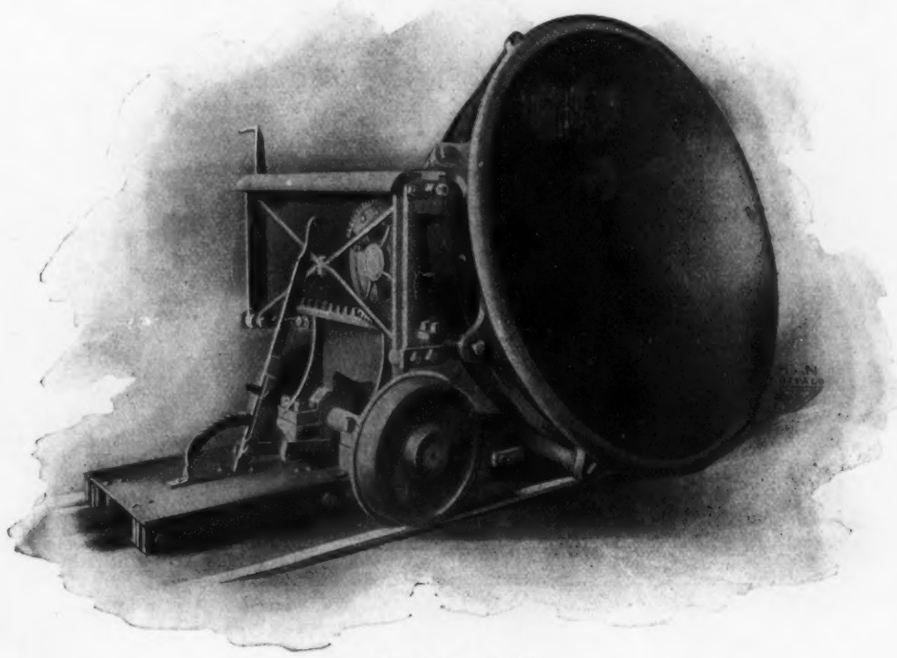


*Fig. 2.—Car Tilted.*

THE TREADWELL SLAG CAR.

Empire Chain Company, Pittsburgh; capital, $1000. Directors: W. G. McKenny, J. L. Sehn and Arthur L. Over, Pittsburgh.

Car Wheel & Foundry Engineering Company, Pittsburgh; capital, $1000; and Central Car Wheel & Casting Company, Pittsburgh; capital, $1000. Directors: J. Charles Dicken, W. C. Dicken and Thomas Ewing, jr., Pittsburgh.

Harper Mfg. Company, Chester; capital, $10,000. Directors: E., C. E., A. C. and J. M. Harper and John Dodge, Chester.

Standard Bronze Company, Pittsburgh; capital, $5000. Directors: John Hutzen, W. A. Cochran and E. S. Hale, Braddock.

Federal Machine Company of Allegheny, Pittsburgh; capital, $15,000. Directors: Jacob C. Beistle, Elmer E. Kidney and D. G. Knittel, Allegheny.

Lake Shore Steel & Wire Company, Miles Grove; capital, $10,000. Directors: F. D. Van Arsdale, J. D. Sullivan and John H. Miller, all of Miles Grove.

Catawissa Car & Foundry Company, Catawissa; capital, $10,000. Directors: W. H. and G. B. Rhawn, J. K. Sharpless and C. E. Randall, Catawissa.

Fiber Horse Shoe Company, Pittsburgh; capital, $1000. Directors: G. H. Bartley, W. C. Moreland and A. L. Over, Pittsburgh.

Pitt Mfg. Company, Pittsburgh; capital, $20,000. Directors: Taylor Alderdice, J. Fawell, W. H. Latshaw, H. S. Evans, L. H. Martell, J. Weidman Murray and H. R. Cornelius, Pittsburgh.

Carbon Steel Casting Company of Lancaster; capital, $100,000

Smith Hardware Company, Kane; capital, $25,000.

Eastern Steel Company, Philadelphia; capital, $300.

Harman-Cogger Company, Bloomsburg; capital, $40,000.

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## Lake Ore Matters.

DULUTH, MINN., June 29, 1902.—Ore is now going forward at a tremendous pace, not only from the Minnesota mines but from all Lake Superior ports, including Michipicoton. There is less delay than at any time this year, and the tie up in antiracite coal is helping out car deliveries from lower lake receiving ports to such an extent that they are not now a clog in the wheel. Figures for June will not fully reflect this increase, for there were some annoying delays and drawbacks during the early part of the month. In this connection a train of ore cars hauled down the Duluth & Iron Range road a few days ago is of interest. It consisted of 29 50-ton steel cars and 56 of the older 27-ton wood cars, and the load was 3000 gross tons. Up to a year ago 17,027 tons of ore constituted a large load. The use of pusher locomotives and of the steel cars, with their smaller dead weight per ton of live load, has made the difference. The Duluth & Iron Range road is so well pleased with these steel cars that an order for 600 or 700 of them is in contemplation, and it is not likely that any other style will be built for the line hereafter. The Eastern Minnesota road, now, by the way, leased by the Great Northern for a 99-year term, has 500 of these cars coming this season, and is receiving deliveries occasionally. With them all on the ground shipments over that line will be materially increased.

### Hill Interests on the Mesaba Range.

There has been some speculation of late on the proportional amount of Mesaba range ore under J. J. Hill control, not necessarily owned by him, but controlled for purposes of traffic. This matter has been referred to occasionally in this correspondence, as the plans of the Hill interests for the entrenchment of their road in the Mesaba country have gradually unfolded, and it will be no great surprise to those that have followed this correspondence to know that the general talk about Duluth is now that Hill has nearly a third of the ore in the ground. I do not think the proportion is quite 33 per cent., at least not yet, but it is growing fast, and there are well located lands that may increase it. Of course other interests also hold a large acreage in unexplored and well located lands that may increase their proportion as fast as the Hill tonnage grows. This talk of proportion brings up, naturally, the question of the total tonnage of ore shown on the Mesaba to this date, and in this matter the best posted mining men are saying the least. Newspapers do more talking than those more directly connected with the business. I find it easy to figure up a tonnage that is in excess of all estimates made by those in a position to know anything about what they say, but the published estimates of the past few days are rather wild. One thing is sure, and that is that the lowering of standards, notable the past year or two, has brought into measurement a great many millions of tons heretofore not regarded as ore.

### Increased Stripping.

By reason of higher labor costs, which are not expected to be cut for some years, at least, and because of the growing scarcity of cheap mining timber, the thickness of surface that can be stripped is increasing and several mines are now having a depth of overburden taken from them that would have been regarded as suicidal in former years. At the Croxton, in 13-58-20, for instance, they are stripping 60 feet of overburden. At the Kinney, in 14-58-19, the Republic Iron & Steel Company have let a contract for removing 1,000,000 yards of overburden to the Wallace Contracting Company, a company formed by G. W. Wallace, late manager of the Stevenson. Mr. Wallace is getting in his material and preparing to commence work. I was at the location this week. It is still thick woods and swamp, but in a month steam shovels, locomotives and dinkeys will make the landscape hideous. Possibly some ore may be shipped this year. This is an Eastern Minnesota road property containing 7,000,000 tons. Its stripping runs up to a thickness of 45 feet.

At the Stevens mine of the Minnesota Iron Company, in 36-59-15, they will take off 250,000 yards of material this year, running from 18 to 40 feet in depth. Some ore may be shipped in 1902, but it is scarcely likely. The mine has a very large deposit. Two large shovels are working day and night. In this neighborhood a good deal of ore is being found. The Union Steel Company have a very large mine here, and three other explorations a mile or two south are in ore.

A stripping contract amounting to 500,000 yards has been let by Pickands, Mather & Co. at the Buffalo Steel Company's new Albany mine a mile southwest of Hibbing. Several other new mines are developing in the immediate vicinity, a review of which will be made later. It is claimed that the mining pay roll at Hibbing amounts to about $200,000 monthly. At the Deering Harvester Company's two mines at that end of the range the shaft at the Agnew is in ore, and that at the Hawkins is so far down that drifting is well under way in the ore body. The railroad will not reach this mine until fall and the shipment of the year will be from underground development work, no advantage from the stripping being possible before next season.

Ore has been found under the village of McKinley, and it is probable that the town will be moved to an adjoining 40, though this is not yet assured. This ore find is not a new one, but has recently received attention. The same is true of a find close by on what is called the "Sheridan 40," and where a shaft is to be sunk this year by men in the employ of the Republic Iron & Steel Company.

At the Sharon mine of the Sharon Steel Company they have just recovered from a serious drowning, so far as to recommence shipments on a small scale. They were sending down about 1900 tons daily before the severe rains of a month ago, and now are recommencing to ship, but only about 300 tons daily. So bad was the water that some of the lateral workings from which they expected to mill 250,000 tons this year have been filled solid with *débris* from the surface and have been bulkheaded up for the present.

Section 21 mine of the Lake Superior Iron Company, now a United States Steel property, is becoming one of the corporation's big mines. It is developing remarkably. It is stated that it will probably be a very important asset for many years, far more so than had been looked for a short time ago. This mine lies at the easterly end of the narrow south exposure of the Negaunee iron bearing formation running through to Humboldt and Champion, and the corporation, through the Oliver Iron Mining Company, have been securing a large amount of land through there. The Saginaw, lying between section 20 and the Goodrich, both Oliver lands, has passed, through purchase, into the hands of the Union Steel Company, and may be developed later. Around Palmer also, on what is known as the Cascade range, the two companies have much land near by each other, and that district will probably be very much more active in the future than it has been for many years.

In the old Felch Mountain district, which has been idle for many years, G. A. St. Clair of Duluth, who has been working for some time, has commenced hoisting ore at the Northwestern mine, whose last activity was in 1884, up to which time 17,000 tons had been shipped. Mr. St. Clair has also the adjoining Metropolitan, Calumet and Hecla mines and expects to develop quite an ore body there. At the Northwestern he has shown Bessemer ore by drill, and will make a large shipment next year. The Metropolitan shipped 107,000 tons and closed in 1888. It was, I believe, the first mining investment of the Metropolitan Land & Iron Company, who later became the owners of the Norrie. The Calumet has shipped 38,000 tons and the Hecla never became a shipper.

John D. Gilchrist, formerly of Duluth and manager of the Mountain Iron mine of the Mesaba, has now been made general manager of the mining interests of the Colorado Fuel & Iron Company. He has been in charge of their Sunrise, Wyo., mines for 18 months past.

D. E. W.

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Janney, Semple, Hill & Co. of Minneapolis, Minn., have sold their stock of bar iron and steel, plates, &c., to the Minneapolis Iron Store Company of that city, who will enlarge their warehouse.

## The Illinois Steel Company.

### An Inspection of the Chicago Plants.

As a part of the policy of the management of the United States Steel Corporation, President C. M. Schwab last year inaugurated a system of annual inspection tours of the various constituent companies of the United States Steel Corporation. In pursuance of this policy Mr. Schwab and other corporation officials from New York and Pittsburgh visited the South Chicago and Joliet works of the Illinois Steel Company last Thursday. Included in the party were the following: C. M. Schwab, president; Jas. Gayley, first vice-president; W. B. Dickson, second vice-president; Veryl Preston, third vice-president; W. R. Walker, assistant to president United States Steel Corporation; W. E. Corey, president Carnegie Steel Company; H. J. Lindsay, assistant to president Carnegie Steel Company; Geo. T. McMurtry, assistant to president American Sheet Steel Company; T. J. Hearne, assistant to president National Tube Company; Wm. B. Schiller, first vice-president National Tube Company; W. P. Palmer, president American Steel & Wire Company; D. G. Kerr, ore agent Carnegie Steel Company, and Dan'l M. Clemson, president Pittsburgh Steamship Company.

President E. J. Buffington, First Vice-President T. W. Robinson, Illinois Steel Company, and A. F. Banks, president and general manager of the Illinois Steel Company, accompanied the Eastern officials on the inspection trip.

The social functions which had been planned in honor of the visiting officials were abandoned because of the recent death of Mrs. Gary, wife of Judge E. H. Gary, chairman of the Executive Committee of the United States Steel Corporation.

It is known that the policy of the United States Steel Corporation favors the adoption of the plans previously arranged by the constituent companies prior to the formation of the corporation, and as the Federal Steel Company had not only contemplated but arranged for an appropriation of at least $10,000,000 for the improvement of the Illinois Steel plants at South Chicago and Joliet, it may be inferred that at least this amount of money will soon be expended for increasing the facilities, adding to the equipment and otherwise making improvements at the present plants. It is also reasonably presumable that new structures for the manufacture of steel will be erected. This assertion is based upon the knowledge that recent economies adopted by the Illinois Steel Company have demonstrated the advantages possessed by the company, at South Chicago especially.

It has been made public that the Illinois Steel Company recently purchased real estate adjoining the property at South Chicago, and it may be stated that they are now in possession of ample ground upon which to erect the new structures contemplated.

From the fact that President Schwab expressed himself as well satisfied with the management and progress made at the South Chicago plant and also that it is in line with his policy to have each constituent company attain and maintain a position of the highest degree of efficiency, it is reasonable to assume that the improvements will not be long delayed either at Joliet or at South Chicago.

It has been asserted that a tube mill will be erected in this vicinity, but while the corporation will erect a tube mill probably at Lorain, Ohio, it is not contemplated to construct such a plant in this locality.

The difficulties encountered by the United States Steel Corporation in converting preferred stock into bonds may possibly delay, but will not prevent the improvements projected, it being understood that the necessary funds will be provided through other means if necessary. The Eastern officials returned East by special train by way of Cleveland and Lorain, Ohio, where an inspection of the steel plants located at the latter place was made, as at Chicago.

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We are advised that the Standard Roller Bearing Company, Philadelphia, Pa., have recently purchased the complete plant and equipment of the Roller Bearing & Equipment Company of Keene, N. H., and as soon as practicable will move the machinery and business to their new Philadelphia factory now in course of erection. The company also bought recently the business of the Grant Roller Bearing Axle & Wheel Company of Cleveland, Ohio.

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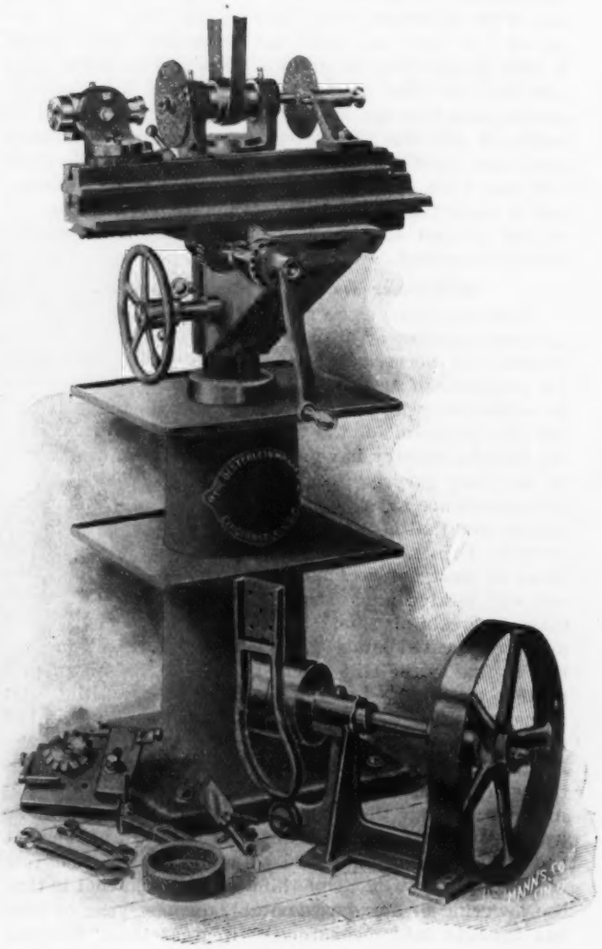
### The Oesterlein Cutter and Tool Grinder.

The new cutter and tool grinder built by the Oesterlein Machine Company of Cincinnati, Ohio, is designed for grinding such tools as milling cutters, reamers, shafts, bushings and so on. The spindle head carrying



THE OESTERLEIN CUTTER AND TOOL GRINDER.

the emery wheel is so mounted on a heavy column that it can be turned to a right angle either way, thereby bringing the wheel to any position from a right angle to parallel with the table. The head is graduated to degrees, and can be secured at any point. The table is moved by means of a clutch handle, the advantage of which is that it may be quickly put in the most advantageous position for the operator. The adjusting table has graduations on the ends, the lines indicating 1-32 to 1 foot of the table, and taper work can be accurately set. The table is also provided with adjusting screws and adjustable stops. It is raised by means of rack and pinion, and the rack is held in position with one screw, which may be removed and the table swung around the column as in other grinders. The cross slide screw has graduations to read to thousandths. The table has a cross movement of 6 inches, lowers 5 inches and moves back and forth 15 inches. The centers swing 7½ inches in diameter, and take 16 inches on the adjustable table and 14 inches on the regular table.

## The New Niagara Electric Power Plant.

It is expected that power from the installation in the new wheel pit and station of the Niagara Falls Power Company will be available some time in August. In length the wheel pit is 463 feet, and its depth is 178½ feet, the width being 18½ feet. The installation will have an output capacity of 55,000 horse-power.

The turbines to be installed in this wheel pit will differ from those in the present pit, in that they will be of the internal discharge type, the water discharged being carried away through draft tubes. By this method it is claimed the efficiency is increased about 10 per cent. Escher, Wyss & Co., of Zurich, Switzerland, designed the turbines, and they were built by the I. P. Morris Company of Philadelphia. The governors that will hold these wonderful turbines under control were also built by Escher, Wyss & Co., and A. Falkenau of Philadelphia is making them. The governors will be of the oil pump type and the maximum variation of speed will be 5 per cent. with 100 per cent. load variation.

Each of the 11 generators to be installed in the new power house will be of 2750-kw. (5000 horse-power) capacity. They will make 250 revolutions per minute and will generate current at a voltage of 2300, two-phase, 25 cycles. Thus the current will be generated at such a voltage that the service of the two great power stations will be interchangeable. While the Niagara development is among the plants on which modern ideas were expended, it is a fact that electric science has moved forward since the equipment of the first station was completed. For this reason the new station will differ somewhat from the old station. In illustration of this it may be pointed out that the generator regulation on the old machines is about 30 per cent., while on the new ones it will be 10 per cent. In the old power house two switchboards are installed, each controlling five of the generators, while in the new station a single switchboard will be used to control the 11 generators to be installed. Another point is that the feeders will be protected with automatic oil circuit breakers.

The 10 huge generators in the present station are of the external revolving field ring type, and the first six generators to be installed in this new power station will be very similar in appearance, with the exception that the iron bridge over the old generators will be omitted in the new generators. This change has been brought about by placing the collector rings at the bottom of the dynamo shaft instead of at the top. The close regulation mentioned above will give constancy of voltage on the system under variations of the load. In the ventilation of these great new power producers quite a radical change has been made, and the expectation is that they will run many degrees cooler than the machines in use at the present time. In describing this method of ventilation H. W. Buck, electrical director of the Niagara Falls Power Company, says: "A baffle plate has been placed between the bottom of the armature winding and the bottom of the revolving field. This forces all the air which is actuated by centrifugal pressure to enter the machine at the bottom inside of the armature shell. From here the air passes upward through the air ducts in the armature core, cooling the iron and the winding. It then continues outward radially between the layers of the field winding into an annular space at the back of the field coils and thence outward through holes in the magnet ring, which are bored in line with the pole piece bolts. The action is that of a centrifugal blower caused by the rotation of the field poles and ring. Some of the air also passes outward at the top of the ring through ventilating holes provided for the purpose. The operation of the air system is very satisfactory, and the blast of air secured is tremendous."

The other five generators that are to be placed in this power station will each be of 5000 horse-power capacity, but will be of the internal revolving field type. They will make the same number of revolutions and generate current at the same voltage as the generators above mentioned. The cost of building these five machines will be less than the cost of building the other generators. It will thus be seen that when the two big stations of the Niagara Falls Power Company are completed in their installations, there will be three styles of generators, but the expectation is that there will be no trouble in operating all the types in parallel.

In power house No. 1 the exciter plant has position on the main floor of the dynamo room, but in the new installation it is provided that the exciters be located in a chamber at the bottom of the wheel pit in very much the same position as the water pumps in the old pit are located. The exciter plant will consist of four 150-kw. compound wound vertical shaft machines of 220 volts, coupled to independent turbines. Their speed will be 750 revolutions per minute, and each machine will have its own governor. From this plant all the power station lights and auxiliary motors will be operated.

The six generators of the external field type will be controlled by one section of the switchboard, and the five generators of the other type will be controlled by another section of the board. The 21 generators in the two stations will be operated in four groups, but they may be operated in parallel when desired, and any of the generators may be thrown into either group.

Splendid progress has been made in completing this second great installation, and the time when the first current will flow from the generators is not far distant, a fact that will give added interest to the wonderful development of Niagara.

## Improvements at the Port Henry Mines.

Witherbee, Sherman & Co., Incorporated, of Port Henry, N. Y., are now erecting No. 2 Separator for the concentration of a part of the output of their Old Bed 21 mines. This separator is practically the duplicate of No. 1 Separator, which they are now running, and which has a daily output of about 400 tons of concentrated ore. The Old Bed 21 ore runs about 61 per cent. iron, and 1.25 to 1.50 per cent. in phosphorus; the concentrates produced average about 67 per cent. in iron and 0.50 per cent. in phosphorus; the gangue, or tailings, carry about 3 per cent. in iron and about 26 per cent. in phosphoric acid. These tailings are being sold to phosphate works for fertilizing purposes, and also to blast furnaces desiring to increase the percentage of phosphorus in their pig iron. It is interesting, as a matter of local history, to relate that some 50 years ago this same ore was put through a roughly constructed magnetic separator, and that the phosphate gangue, or apatite, obtained was shipped to England for fertilizing purposes and the iron ore sold as a by-product.

Witherbee, Sherman & Co., Incorporated, are just starting upon the erection of a No. 3 Separator of about 400 tons daily capacity for the concentration of the lean ore of their Harmony vein. This lean ore runs from 45 to 55 per cent. in metallic iron and about 0.11 per cent. in phosphorus. The concentrates will contain about 67 per cent. in iron and 0.03 per cent. in phosphorus. The regular shipping ore of this vein carries about 62 per cent. in iron and from 0.08 to 0.11 per cent. in phosphorus, and constitutes about two-thirds of the output of the vein, the other third being the lean ore referred to.

They are also just starting upon the erection of a large central power plant, from which they expect to generate sufficient electrical power to run the three separating plants, to furnish sufficient electrical power for four new hoists for the two Harmony shafts and also to furnish electrical power for generating sufficient compressed air for these shafts. The General Electric Company will furnish the electrical equipment, probably Allis or Nordberg will furnish the engines and compressors. Webster, Camp & Lane will make the hoisting machinery, and the crushing machinery is being designed by Theodore Blake of New Haven, Conn.

They are making these developments of the property to meet the large demand likely to come from the Lackawanna Steel Company's plant, at Buffalo, when completed, that company having recently acquired a third interest in the company. It is interesting to state that Witherbee, Sherman & Co., Incorporated, are at present making deliveries of their ore over a territory reaching from the Mississippi River to Sydney, Nova Scotia, although the larger demand, of course, comes from New York State and Eastern Pennsylvania.

# Chains and Their Manufacture.

Chains are one of the most ancient devices for tying (fastening) and lifting, and their origin antedates reliable history. They were used by all ancient nations familiar with the art of working metals, and the oldest preserved representations of early life show their application for securing prisoners. At present chains occupy a prominent place in many industries and as household articles, and perhaps more lives depend on the quality of chains and more accidents are caused by the failure of chains than is the case with any other elementary device, perhaps bolts and rivets excepted. They are one of the things rarely spoken of, occupying less attention and receiving less care than other devices of equal importance.

Chains may be classified, according to their applications, into ornamental chains, load chains and driving chains. Frequently chains of a certain type are, however, applied for several of the above purposes, and the classification suffers from the fact that it is impossible

*Fig. 1.—Plate Chain Link.*

*Fig. 3.—Another Form of Plate Chain.*

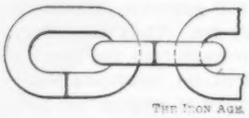



*Fig. 4.—Wire Chain.*

*Fig. 2.—Chain Formed of Links Fig. 1.*

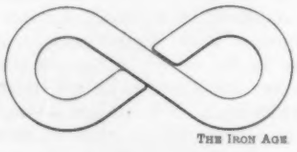



*Fig. 5.—Figure 8 Chain.*

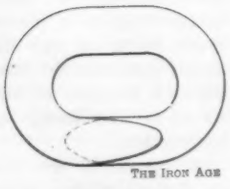



*Fig. 6.—Open Link Welded Chain.*

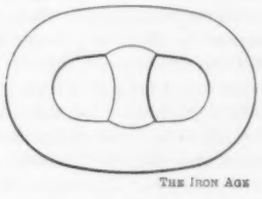



*Fig. 7.—Stud Link.*



to draw a distinctive line between the different classes, and it is better to divide them according to their shape and manufacture into the following groups:

Plate chains (punched).
Wire chain.
Welded chain, { Butt welded, Lap welded, Laminated.
Weldless chains, { Double loop chain, Cast chain, Rolled chain, { Rolled, Punched.
Pin chains, and
Link belt chains.

Chains consist of a series of links flexibly connected with the adjoining links; they are only able to transmit tension, never compression. The ornamental chain is not supposed to be subjected to severe strains, and its design varies according to the taste of the maker or user. Generally they are made of expensive materials, and they are not applied in the industries. One style of ornamental chain worth mentioning here is the heavy iron guard chain frequently seen and used as fences around public monuments, squares and monumental buildings. As the strength in such decorative chains is of subordinate importance, neither material nor shape is selected with a view to secure the greatest strength at the least weight or cost.

**Plate Chain.**

The plate chain is an intermediate style between the ornamental and the load chain, and is commonly used for attaching loose pieces to a certain place, as keys, plugs in plumbing work, or cups at wells, sash weights, &c.

Most of these chains are stamped out of brass strips, in the shape of Fig. 1, with a hole in each end; they are then doubled up and the ends are secured by inserting and doubling up the next link, Fig. 2. A lighter style is made by punching similar links and by inserting the new link through the aperture of the preceding link, and pushing one of its ends through the aperture in the other end of the same link, Fig. 3. These chains are also not supposed to be subjected to severe strains, and the use of brass fully complies with this requirement, adding at the same time to their appearance and durability on account of its resistance against corrosion.

**Wire Chain.**

The wire chain forms an intermediate link between the plate chain and the welded load chain. The links either have the shape of the ordinary oval link, Fig. 4, consisting of a round piece of wire bent around an oval mandril, with both ends butting against each other, or they are shaped like an 8, with two openings, the ends butting against the sides of the wire piece near the middle, Fig. 5. The strength of this chain, for a certain size of wire rod, decreases with the increasing size of the opening, and generally the strength of the chain is about one-sixth to one-eighth of the strength of the wire rod. Owing to the lack of strength this chain is not used for heavy work, and as far as its application in the industries is concerned, it is not necessary to deal with it here.

**Welded Chain.**

The welded chain deserves the more our attention, as the greater part of all chains in use are welded. These chains have either long or short links or open, Fig. 6, or stud links, Fig. 7. Until lately American chains could be easily distinguished from European chains, as the style prevailing here shows two straight sides between two half circles, while in Europe the generally adopted style was an ellipse or an approximate shape, with the inner radius at the ends just a trifle larger than the half the diameter of the chain rod, while the greatest inside width (at the middle of the link) was one and a half times the diameter of the chain bar. Lately, however, some German (and it is said also some English) manufacturers, recognizing the superiority of the straight link, have adopted the American style.

Considering that the old weld is always the weak and unreliable part of the link, the fewer there are of welds in a certain length of chain the stronger is the chain, if subjected to tension only. Also the greater convenience in welding long links has a slight tendency to render long link chains a little more reliable.

On the other hand, if these chains are compelled to lay around convex bodies (drums and sheaves) under load, the links are subjected to bending, and the longer the links the greater is the distortion. The hoisting chains, therefore, are almost exclusively short link

chains or cable chains, and it is to these that the following applies. According to accurate tests (report United States Board on Testing Steel and Iron, 1, p. 203) of 210 lots of chain cables—

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | chain | had | a | strength | of | 85 | per cent. | of | that | of the double bar. |
| 21 | " | " | " | 75 | to | 85 | " | " | " | " " |
| 14 | " | " | " | 70 | to | 75 | " | " | " | " " |
| 107 | " | " | " | 55 | to | 70 | " | " | " | " " |
| 65 | " | " | " | less | than | 55 | " | " | " | " " |

It does not seem safe, therefore, to credit chains with more than 50 or 55 per cent. of the strength of the double bar, or a breaking load equal to that which a single bar can stand.

These welded chains are almost exclusively made of wrought iron or of very soft steel, because the difficulties of welding increase with the hardness of the metal, and for this reason chains made of softer metal may not be as strong as those of harder steel, but far more reliable. In most of the chains made in this country the links are first coiled, then sheared to length, while a number of works, especially in Europe, first shear and then bend the links. By the first method a bar of round iron is coiled around a twisted mandril, the cross section of which nearly represents the clear opening (eye) of the link. Unless the mandril bar is twisted a small amount, the helix, when relieved of the strain of winding, will relax and form a coil similar to the one shown in Fig. 8. The pitch of the helix should be equal to at least twice the diameter of the bar, in order to facilitate the shearing, and especially afterward the insertion of the links. The excess of length of this helical link coil over its projection (the link when flattened) allows sufficient extra metal for the overlap of the weld. The shearing is done at as sharp an angle to the bar as possible, so as to give the weld the greatest possible length. After the links are coiled and sheared they are heated to welding heat, quickly inserted, bent together by a blow with the hammer and finally welded between the dies of a power or spring hammer.

In order to avoid fins and to make the link round, it is turned over once or twice in the die during the operation, so that another part of the surface may be exposed to the dies. The process is so simple that an illustration is scarcely needed.

In some Continental works they first cut the straight bar by oblique cuts to proper length, heat them to welding heat and insert them, still straight, into the last link of the chain, between two formers, Figs. 9, 10 and 11, which, when turned around half a revolution, leave the link bent to proper shape, and only the final welding between dies remains to be done, the same as in the usual lap weld process. The mandril has between the two fulcrums of the formers, in the center, a notch sufficiently large to receive the end of the last finished link, and is held in place by two pins projecting downward into the fulcrum shafts of the formers. A block (not shown in the drawing) in the center holds the straight bar in proper position between the rollers and the mandril. The levers at the bottom are connected by links or gears, so that they move in harmony in opposite directions.

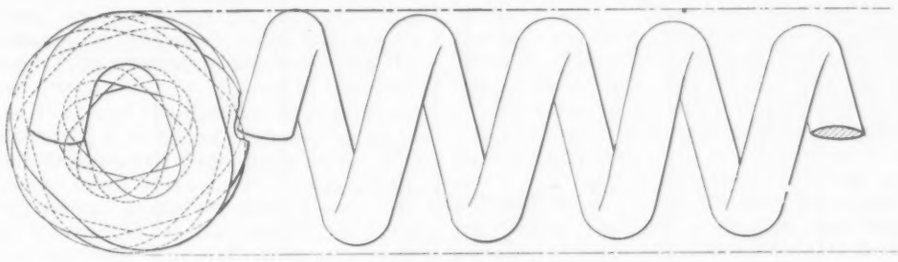
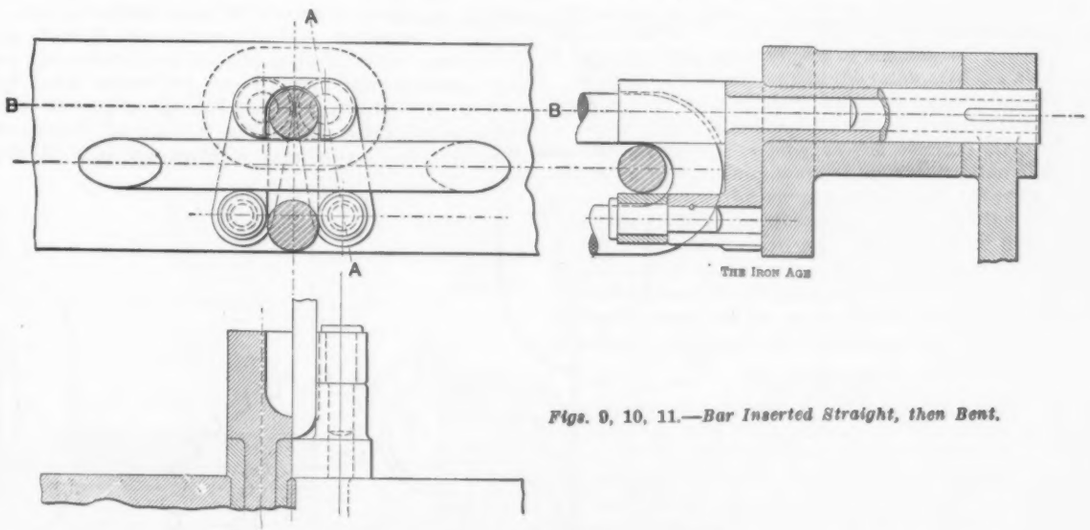


*Fig. 8.—Bar in Form of Coil.*




*Figs. 9, 10, 11.—Bar Inserted Straight, then Bent.*

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In England, where they still adhere to the elliptical link, they use a similar contrivance, only instead of the formers swinging around the centers A and B, they use a cross slot for guiding the formers, working on the principle of the well-known ellipsographs, or an external cam slot, forming an elliptical groove, in which the formers are guided by two rollers moving in the elliptical groove.

### The Laminated Link.

The weakness of the weld was a fact recognized a long time ago, and many chain makers and inventors spent a great deal of time and thought on improving this particular detail of the lap weld process. In the first place the weld was made (as is done nowadays) as long as possible by making the angle at which the bars were sheared as sharp as possible. For the purpose of making the welding area longer still, it was tried to make the links of double or even triple thickness of the bar by cutting every alternate or even third coil. The latter could be done only in chains of excessive and unusual lengths of the links, for which there was no demand, and even the double coil required a somewhat longer link than the recognized standards, in order to get

clearance enough to insert the heated coils. The attempts in this direction were abandoned, but the large number of patents, some even of recent date, covering improvements for the achievement of this purpose demonstrate the efforts which were made in this direction. Several parties attempted to wind links by hand. A piece of wire was slung through the link and around a former mandril so often as to make up at last the required thickness, and this wire coil then was heated and at last compressed and welded under the hammer. Others proposed (evidently these patented ideas never were carried into practical use) to solder the coils to-

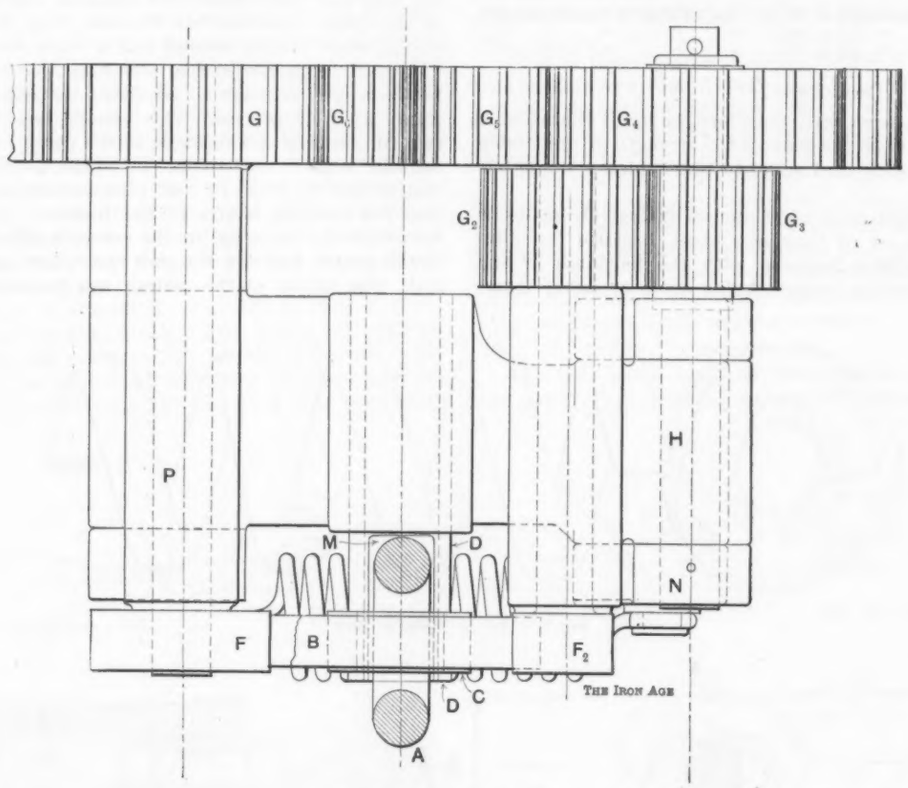


*Fig. 13.—Plan Fig. 12.*

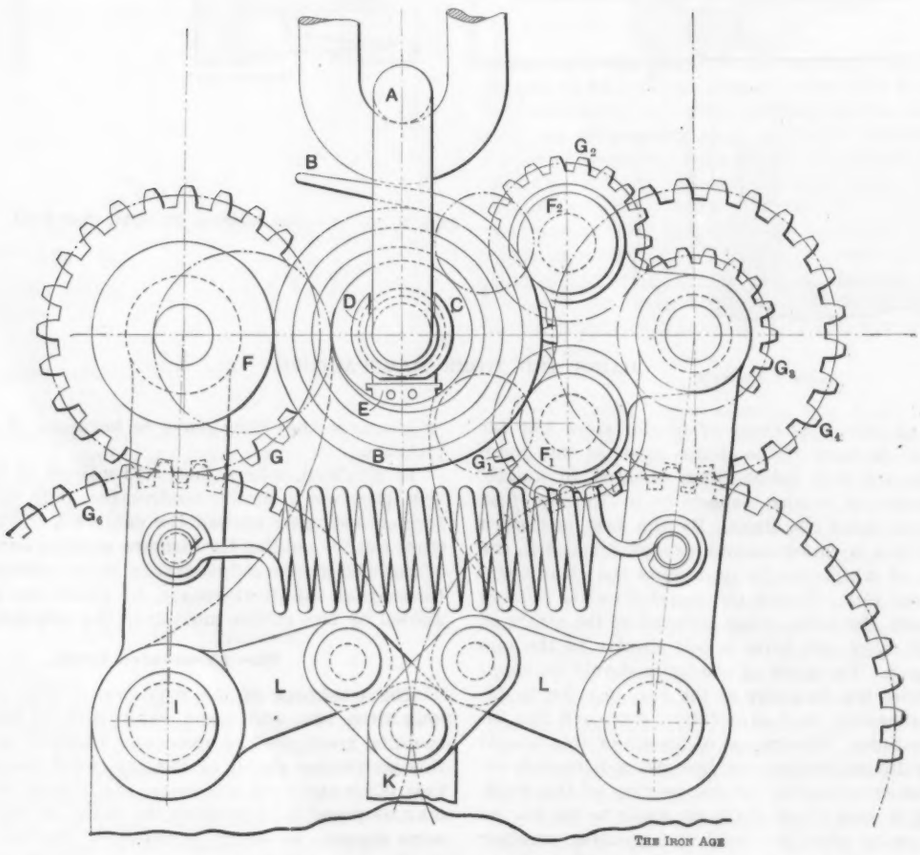


*Fig. 12.—A Belgian Method of Chain Making.*

## CHAINS AND THEIR MANUFACTURE.

gether, or to cover them with a specially stamped envelope made in halves and then weld or solder these wrappers also. While, however, none of these schemes was successful, they led the way to a process which is now in use in Belgium, and, induced by the results of it, several prominent firms in Europe have acquired the right to use it.

**A Belgian Method.**

Figs. 12, 13 and 14 will give an idea of the principle of the process and the machine; no claim, however, is made for the correctness of the proportions of the details.

A round center pin, D, held rigidly, is notched out at one projecting end to receive the end of the preceding (last) link, A, of the chain. Around this pin and through the eye of the link can be rotated a ring or collar, C, which serves as internal former, and the outer circumference of which is equal to the inner circumference of the link. In order to get the last (preceding) link, A, through the ring C and into the notch M of the pin D, a closing piece, E, is removably dovetailed into the ring. The power driven rollers F. $F_1$ and $F_2$ swing on the levers P and N around the fulcrum I, and can be pressed against the ring D by means of the levers L and the rod K, which is connected with a foot lever. The spur wheels G serve to make the rollers F rotate with the same circumferential speed. To make a new link, the closing piece E is pulled out, the collar C turned so that the opening coincides with the notch M in the center pin D. The end of the chain is lowered, so that the end of the last link A drops into the slot M, Fig. 13. The collar is turned again to allow the insertion of the closing piece E, the rollers F being thrown back to facilitate the entering of the flat strip B, which previously had been heated to the welding temperature. On pressing the rollers against the strip the friction of the rollers makes the strip B and collar C revolve around the pin D, and the strip is gradually coiled spirally around the ring E. The pressure is sufficient to weld the different layers together. After the welding has been finished and all seams or joints closed, the rollers are thrown back again, the wedge E is removed, the opening of the collar C brought to the top position, and the newly welded link can be pushed off the mandril. As soon as one link has been pushed off the machine is ready to receive the link at the other end of the chain, into which a new link is rolled, while the previously rolled link is brought to the finishing machines.

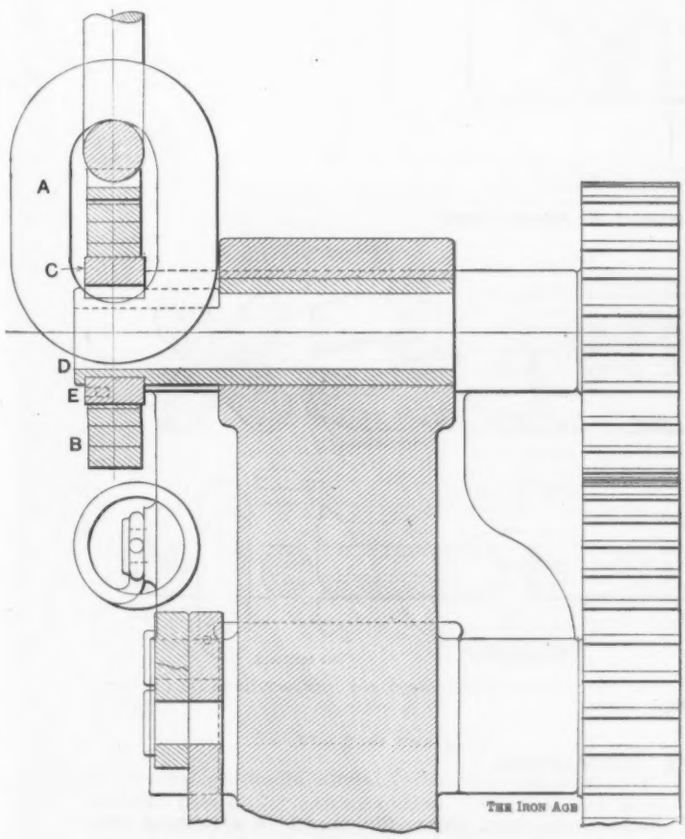


*Fig. 14.—Sectional Elevation Fig. 12.*

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The link formed by the machine just described is still rough and of square cross section instead of round; it also has a larger area in the cross section, but it is shorter than the finished link. It is, therefore, brought, still lively red hot, to a miniature rolling mill, the principle of which is shown in Figs. 15 and 16. The roller heads are projecting, and one roller, *q*, has a fixed center, while the other roller, *r*, is adjustable sidewise. These roller heads have grooves corresponding with the diameter of the finished link, and the edges of the grooves are kept sharp, so as to cut off the fins caused by any excess of metal. The driving is effected by gearing underneath the table (not shown in the sketch), and the power is transmitted by long universal joints to the lower ends of the roller shafts. The two guide rollers S render the rotation of the ring (or link) *b* more steady. The link leaves these rollers with a perfectly rounded and finished surface, but it is not oblong or oval yet, and has to be given this form in a special set of dies, which, however, do not present any features of particular interest. While from the description this seems rather a slow method, the writer saw the work done (on experimental apparatus open to many improvements) at a reasonably quick rate, and with properly constructed and improved machines there should be no trouble to produce 60 to 90 links per hour of average size, say about 1 to 1½ inches, on each set of machines.

It will be noticed that in the laminated (as also in the wire wound and welded) link the quality of the weld scarcely affects the strength of the link, as the welding surface is nearly as long as the original strip of iron, and even without any weld at all, the friction of the different layers of the strip against each other is almost sufficient to tear the link rather than unwind the strip. There is no reason, however, why the weld in this case should not be as strong per unit of area as in the weld of the ordinary link, and the strength of the chain with laminated links can be safely taken as twice the strength of a bar of the same cross section as the link.

**The Stud Chain**

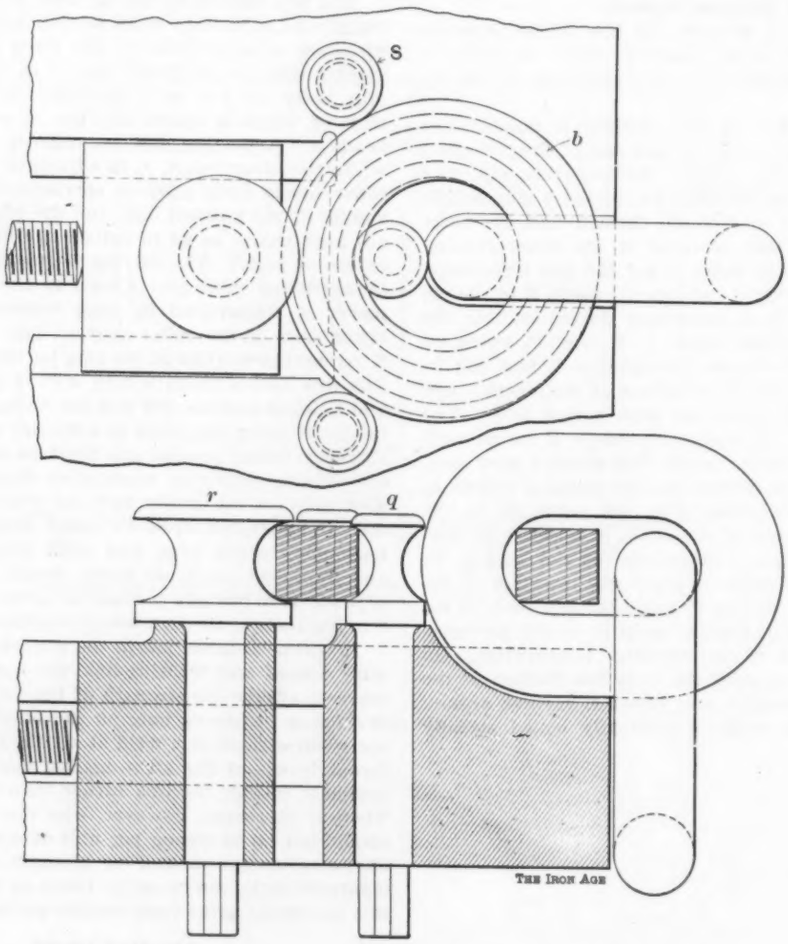
Is made by any method described, either with ordinary lap weld or with laminated links. The studs generally are made of cast iron and pressed into the sides of the link between the dies which are used to give the links the final finish and shape. Many text-books state that the stud chain possesses a strength about 20 per cent. in excess of the strength of ordinary welded chain of the same size. Actual experiments have proven this belief to be a fallacy, as just on the contrary the stud chain, for the same size of chain, is only about 0.94 time as strong, and if we consider the greater weight per foot (about 10 per cent. in excess over the ordinary chain), a stud chain is only 0.85 time as strong as the ordinary chain of the same weight per foot. The stud chain is used only for marine work, and its continued application for this work is rather surprising, as just there the greatest importance is given to the reduction of weight consistent with the required strength. There is little doubt that chains in modern cranes are subjected to harder and more continuous service and more frequent overloads than in marine practice, and the open link chains have been shown to be superior to the stud chains under all conditions met with in crane practice.

**The Weldless Chain.**

Chain makers recognized the weakness of the weld a long time ago, and to avoid its uncertainties they resorted to different means to overcome this trouble. Among the earlier experiments we find a peculiar double chain, a kind of cross between the plate chain and the ordinary chain. Annular disks were either punched out of a plate or small annular ingots of similar shape were cast and in a miniature tire mill rolled into long links of round section. These then were bent double U shape and connected just like the plate chain described above.

While this chain is actually weldless it is not so free to move in the joints as the ordinary chain, and when slightly overloaded the links are very liable to become permanently deformed. Perhaps also the cost of manufacture was rather high, owing to small demand. In short, it never became a factor in the chain business.

are drilled crossways and intersecting through the center of the bar at distances equal to the pitch of the chain. Then the sides (or flanges) are notched to make the bar conform to the outer shape of the links, and then the inner part of the link is punched out. The bar, weakened by the cross holes and the punched out parts, is




*Figs.* 15, 16.—*Rolls for Finishing the Belgian Chain.*

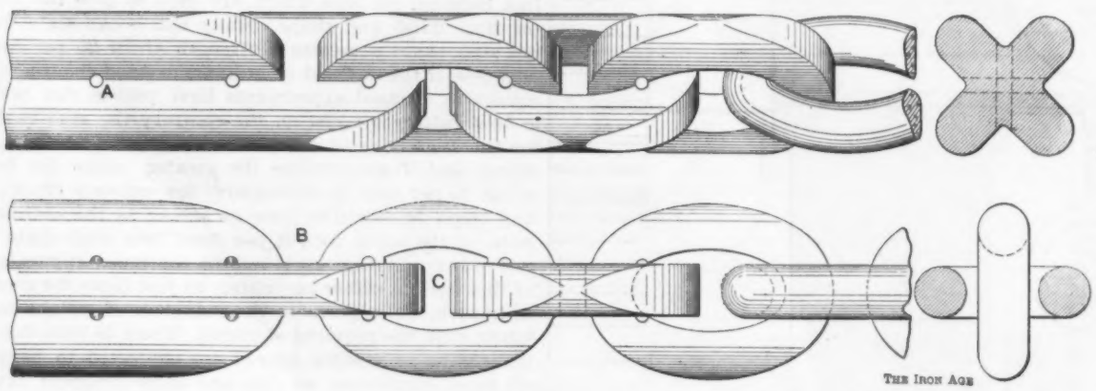



*Fig.* 17.—*Weldless Chain.*

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More successful was the process invented by Otto Klatte of Neu Wied. His method is clearly described and well illustrated in *The Iron Age* of August 30, 1894. It has long ago passed the state of experiment, and the chains made by this process are accepted by the Lloyd and Veritas insurance companies.

Another (English) party adopted a somewhat similar though scarcely better way. As in the process of Klatte, a cross shaped section of steel is rolled, Fig. 17. Holes

broken into short pieces (links), which afterward are rounded and smoothed. The writer has had no chance of seeing this process in operation, and it is mere supposition on his part that the first operation (the drilling and notching) is done cold, while the following part (the punching, rounding and finishing) is done at forging heat. As the process is said to be abandoned it does not matter much either way.

One of the drawbacks of either of these methods is

that the chains thus produced are of limited length, and that for continuous chains intermediate connection links are required. O. Klatte has patented the method of winding links of wire between and through the last links of the chains, as described above, but these links are liable to be irregular and weaker than the rolled chain, thus rendering the whole as weak as the connecting links. If clevises are used (as in marine practice at regular distances) they cause jerks when passing over

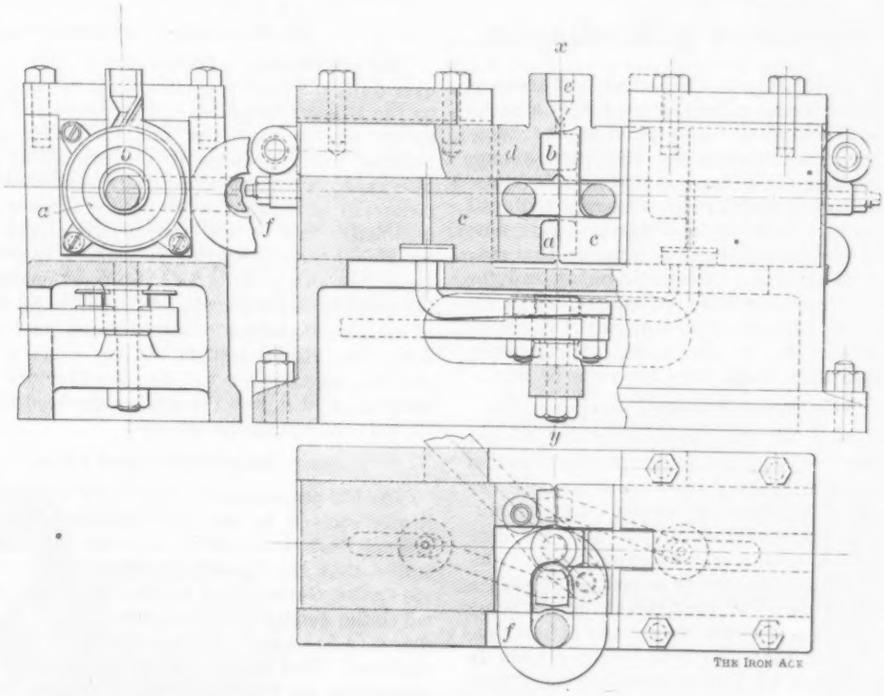


*Fig. 18.—Casting Chain Links.*

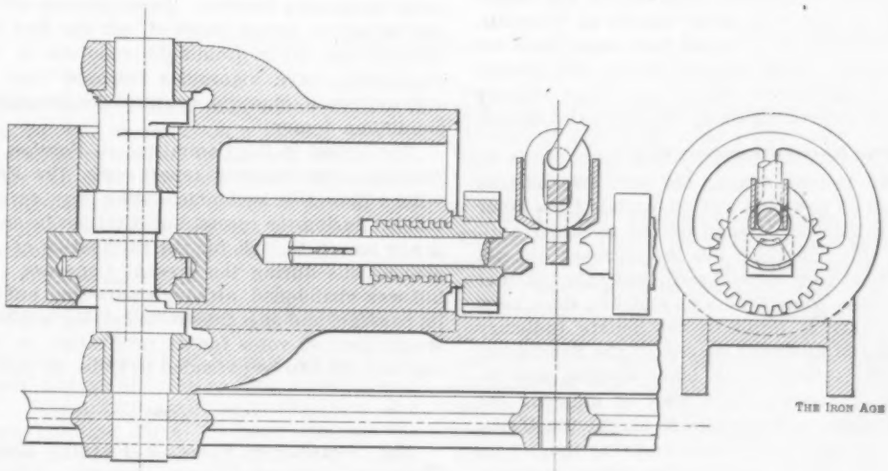


*Fig. 19.—Press for Finishing Cast Links.*

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drums and sheaves, and for crane practice they are not suitable.

**The Cast Chain.**

Several parties in England (perhaps also here) have secured patents for casting chains, either one at a time or a number of links at once. While casting links without afterward working (hammering or rolling) the metal has been a success for ornamental chains, for the ordinary applications of chains these links are too weak and brittle.

A somewhat better product was obtained by the use of steel, but even then the uniformity as to strength and ductility left much to be desired. Experiments are under way to determine the feasibility of a method of casting links of a larger than the final cross section and of nearly square shape, which are intended to be rolled or hammered to round section of proper size. The casting apparatus, Fig. 18, comprises a mold, *a*, with a removable sector or closing piece, *b*, in the upper part of the mold. The joint of the mold is in the plane *x y* of the link, and the closing piece is parted in the same plane. Each of the four parts of the lining of the mold is fastened to the face of a slide block, and the parts of the mold are fastened to the larger blocks *c* and the parts of the closing piece to the smaller slide blocks *d* on top. One-half of the pouring hole *e* is in each half of the removable sector, or closing piece. For casting a link the face of the mold is washed, the two parts are brought together, the last link *f* of the chain is dropped into the center of the mold and then swung sideways to make room for the closing pieces *d*, which are then brought together, thereby closing the mold. The metal is poured in, and after solidifying the closing pieces are pulled back, the preceding link is swung into the central position again and the main parts of the mold are pushed back, thereby exposing the new link. The proportions of the short link or cable chain allow a reduction of 25 to 30 per cent., while ordinary (long link) chain allows a

reduction of 40 to 50 per cent. This reduction, in addition to the change of cross section from the square to the round section, is claimed to be sufficient for rendering the metal ductile and reliable. From the mold the link, still red hot, is brought to a power press. Fig. 19, the dies of which have a reciprocating and oscillating motion around the center of the ram. The new link is thereby rotated continually and new surfaces are successively exposed to the dies.

## Unfinished Legislation at Washington.

WASHINGTON, D. C., July 1, 1902.—The adjournment of Congress for the summer recess leaves a vast amount of unfinished work in the committees and on the calendars of both Houses, but this is not altogether an unmixed evil, in view of the numerous undesirable measures the consideration of which has been postponed until next winter. The fact that but 50 legislative days now remain of the Fifty-seventh Congress indicates that several of the more obnoxious of these bills may fail for lack of time. On the other hand, of course, much desirable legislation has been put over until next December, and may be crowded out by the annual appropriation bills and other measures which have the right of way.

**The Metric System.**

The bill providing for the adoption by the United States of the metric system has failed of consideration through the delay on the part of the Committee on Rules in setting a special order for its discussion. The committee was favorably disposed toward the bill, and had promised Chairman Southard, of the Committee on Coinage, Weights and Measures, that it would be granted a day for the consideration of any measures it might bring forward. This pledge, however, was made at the time when it was expected that Congress would remain in session until the middle of July to consider the Cuban Reciprocity bill, and an early adjournment has cut off several leading committees which have heretofore presented bills of much importance. The metric bill might have been taken up under an order known as "suspension of the rules," but as it would then have been required to be put to a vote without debate, its friends were unwilling to assume the risk of its defeat without the opportunity of explaining its operation to the House.

**The Anti-Injunction Bill.**

Although both Houses during the past two months have been flooded by petitions and memorials from labor organizations urging the passage of the so-called anti-conspiracy and anti-injunction bill the measure did not get through. It will be remembered that this bill was passed by the House some time ago, and has since been reported in a variety of forms by the Senate Judiciary Committee. The bill as finally placed on the Senate calendar was unsatisfactory to the labor leaders, and instead of having it passed with a view of inducing the conference committee subsequently to accept the House bill, they made the mistake of memorializing the Senate against its own bill and in favor of the House measure. As a result, Senator Hoar apparently lost interest in the matter and no action was taken.

**The Eight-Hour Bill.**

As foreshadowed in these columns the Senate Committee on Education and Labor will not report the eight-hour bill before adjournment. The hearings before the committee have already laid the foundation for a great deal of discussion next winter, and unless the Senatorial steering committee takes the bill in hand it may never receive consideration, even if favorably reported. Of course, great pressure will be brought to bear upon the steering committee to give the bill a place on the parliamentary programme, and on one should count upon its failure for lack of consideration.

**Amending the Federal Bankruptcy Law.**

The Senate Committee on the Judiciary recently decided to take no action until the next session upon the Ray bill amending the federal bankruptcy law. This conclusion was forced because of the late date of the passage of the bill by the House, leaving little time for its consideration either in the Senate committee or on the floor, and also because Senator Nelson of Minnesota and several of his colleagues from the West, who are disposed to demand concessions in favor of the debtor class, were unwilling to debate the bill on short notice. Senator Hoar, chairman of the committee, expresses the utmost confidence in his ability to pass the bill early next winter, and the friends of the measure outside of Congress are quite willing to take him at his word.

**The Department of Commerce.**

The bill creating a Department of Commerce also goes over until the next session. This decision was reached by the House Committee on Interstate and Foreign Commerce several days ago, and its public announcement brought many protests to the committee by mail and telegraph. These were carefully considered, but the decision not to report the bill before adjournment was not modified. It was well-known that certain members of the House were preparing to make a spectacular attack upon the trusts, using as a text an amendment to this bill establishing a Bureau of Corporations for the control of all manufacturing concerns doing an interstate business. The House leaders did not think it wise to supply this opportunity for the manufacture of campaign material, and it was therefore suggested to the committee that the bill should go over.

**Reciprocity with Cuba.**

The bill providing for reciprocity with Cuba was practically shelved by the last Republican Senatorial conference, and is not likely to come up again. It is assumed that the President will negotiate a treaty with the Cuban Government during the recess, to be submitted to the Senate next December, or at a special session that may be summoned immediately after the November elections. This treaty will probably be referred to the Committee on Foreign Relations rather than the Committee on Relations with Cuba, and therefore it will be brought into close juxtaposition with the French and other reciprocity treaties. These treaties will expire during the recess unless renewed, but the fact that Senator Aldrich and other prominent members of the Finance Committee have vigorously opposed their ratification will militate against the prospect for favorable action on the Cuban treaty.

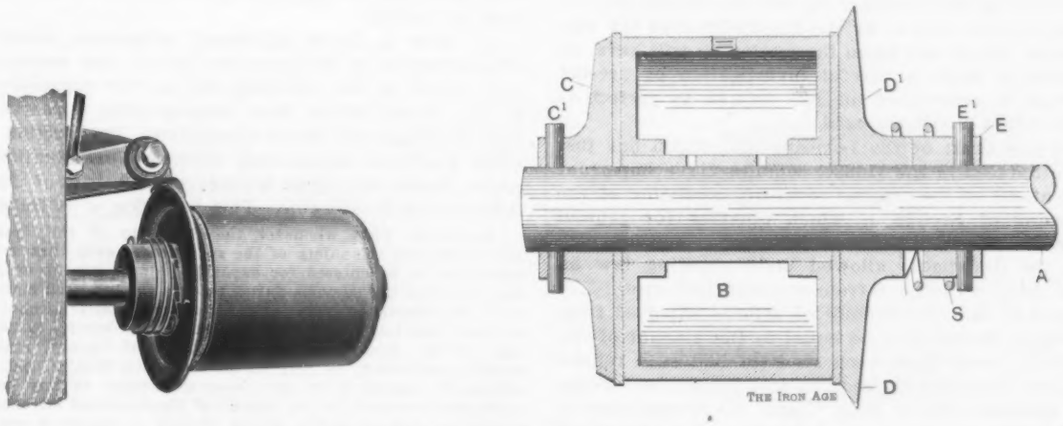
The action of the Committee on Foreign Relations in making a perfunctory report upon the French treaty with a favorable recommendation may result in its extension during the recess, but it cannot be said that there is any reason to look for the ratification of any of these conventions during the present Congress. The Cuban bill was abandoned, although requiring but 45 votes for its passage, and as a treaty embodying similar provisions would need 60 votes for its ratification it is difficult to see how aid can be extended to Cuba by this means.

W. L. C.

**The Pittsburgh Valve & Fittings Company.**—The Pittsburgh Valve & Fittings Company, composed mostly of Pittsburgh capitalists, have been formally organized and will apply for a charter. The new concern will build a plant at Barberton, Ohio, for the manufacture of valves and fittings. The corporation have organized with James I. Buchanan, William D. Hartupee, L. D. Castle, J. A. O'Neill and M. J. Alexander as directors, and the board have elected W. D. Hartupee president and M. J. Alexander secretary and treasurer. A site in Barberton is now being covered with buildings for the new plant. The plans call for 12, constructed of stone and brick. The first buildings will cover 4 acres. They are in a 20-acre plot, directly connected with the Baltimore & Ohio, the New York Central, the Pennsylvania and the Erie lines. The machinery is to be of special design, each machine to be operated by an individual electric motor. The company report having a cash capital at present of $300,000. The general offices will be located at the works, which will start in March. The concern purpose to manufacture their own brass, securing copper from Montana and spelter from Illinois.

## The Hawkins Semi-Automatic Friction Pulley.

On one end of the shaft of the friction pulley made by the Hawkins Mfg. Company, 593 Atlantic avenue, Boston, is a tight friction flange C with a leather friction face. A loose running belt pulley, B, with each end faced for a friction surface is placed next on the shaft. Against the opposite side of the pulley is a loose friction flange D. The rotation of this inner flange in relation to the tight flange is limited by cam teeth which engage in similar teeth on a collar, E, which is pinned to the shaft. A coil spring, under tension, has one end fastened to the collar and the other end to the loose flange. The tendency of this spring is to rotate the loose flange in the direction the belt travels. This rotation of the flange, in consequence of the cam teeth acting on each other, throws the loose flange against the belt pulley. As soon as the friction surface of the flange strikes the running pulley it is more firmly wedged against the cam teeth, which gives it sufficient friction to start the machine. To release the friction on the pulley an operating brake is provided which produces a friction on the large diameter, D', of the loose flange sufficient to retard its motion and throw the cam teeth back into each other. It is stated that by this construction a friction is automatically produced in proportion to the pull of the belt, so that the pulley can never slip under load. The pulley can be made to operate either as a driven or driving pulley. The pulley is made self oiling, the hub being utilized as an oil chamber, and is made in all sizes.




THE HAWKINS SEMI-AUTOMATIC FRICTION PULLEY.

## The Carborundum Company to Enlarge.

The Carborundum Company of Niagara Falls, N. Y., are about to build a large addition to their crushing and grinding plant. This addition will be in the form of a three-story brick building, 50 x 225 feet. During the year other additions and improvements will be made. The plant of the company at Niagara Falls is already one of the largest on the lands of the Niagara Falls Power Company, and, it may be incidentally remarked, one of the busiest. In this connection it is most interesting to note the remarkable and rapid growth of this industry, only a little more than ten years old.

It was in the latter part of the summer of 1891 that E. G. Acheson organized the Carborundum Company, Mr. Acheson being the discoverer of the process by which the abrasive is made. The company were organized under the laws of Pennsylvania and commenced business in Monongahela City, Pa. The first sale of carborundum was made in August, 1891, the amount sold being 200 carats at 30 cents per carat. This price is at the rate of $560 per pound, and this first carborundum was successfully used in polishing diamonds. By 1894 the company's production was 52,000 pounds, and the selling price was 25 cents per pound.

In the fall of 1895 the company moved to Niagara Falls, where Mr. Acheson, with rare foresight, was eager to avail himself for his plant of the new and great power development. In 1896 the production of the Niagara Falls plant was 1,191,000 pounds, or about 20 times greater than it was in 1894. Each year continued to show progress, and in 1901 the production was 3,838,000 pounds, with an average selling price of 10 cents per pound. It is gratifying to observe that, while the facilities for manufacture have been constantly expanded, the market has also been extending, so that at the present time carborundum is being used in all the industrial countries of the world.

In New England, as well as in Scotland, it is used in polishing granite, and in the great agricultural shops of the West it is used in finishing work. The owners of the large New England shoe factories have found a friend and aid in it, and it is used in shoe finishing to a great extent. In the pearl button industry it is said to have supplanted all other abrasives in polishing work, while it is also entering largely into the manufacture of steel, where it is desired to introduce silicon into the metal to produce a more solid casting. It is evident that the discovery of carborundum and its manufacture on a commercial scale have been and are of notable benefit to the world. In the work of enlarging their plant it is clear that the Carborundum Company, of which Frank W. Haskell is president, intend that their output shall be kept equal to the increasing demand for their product.

**The Capital Thermotor Company.**—The De Frees Thermotor Company have changed the name of the company and will hereafter be known as the Capital Thermotor Company of Indianapolis, Ind., with Louis Ohnhaus, manager, and Henry Pokorny, formerly with the E. R. Thomas Motor Company and Farar Trefts, Buffalo, N. Y., as superintendent of the works. The new organization will manufacture both two and four cycle engines from 1 to 100 horse-power. They are located at the corner of Hovey street and Belt Railroad, Indianapolis, Ind.

It is reported that a syndicate have been formed to buy out the American Ferrofix Company, 20 Broad street, New York, and the purpose of the syndicate is stated as the organization of a new company for the purpose of introducing a modification of the European methods adapted to the requirements of this country. The use of ferrofix enables a broken casting, such as a gear tooth, a lever arm, a frame, &c., to be mended by brazing the broken parts together. It is claimed that by this method the casting is made as good as new. The plan in vogue abroad is to establish jobbing shops in each of the large centers of population, and these shops are said to have been showing returns of over 200 per cent. per annum. Owing to the wide separation of cities and towns here militating against the use of precisely similar methods of operation, it is understood that the new company will appoint agents in every township, giving these agents the exclusive right to use and sell Ferrofix. The details are being worked out and will be ready to make public in a few weeks.

## The Lovering Drawback Bill.

WASHINGTON, July 1, 1902.—The Ways and Means Committee has appointed a subcommittee composed of Chairman Payne and Representatives Dalzell, Hopkins, Grosvenor and Russell, with instructions to take up during the Congressional recess the Lovering bill providing for the liberalizing of the drawback law, as found in Section 30 of the Dingley act. This action is based upon the favorable recommendation of the Secretary of the Treasury, referred to in *The Iron Age* last week, which has been forwarded to the committee in response to a request for an opinion as to the practicability and desirability of the proposed modifications. The action of the committee has been followed by the introduction of a revised draft of the bill embodying a number of changes designed to make it conform to the views of the Treasury Department as well as to meet modern manufacturing conditions.

The impossibility of securing favorable consideration at so late a period of the session for so important a measure as the Lovering bill, especially in view of its relation to the general tariff question, made it necessary to postpone action until next December, and while this is regretted by the friends of the bill, this disappointment is offset in some degree by the knowledge that the subcommittee which has taken the matter up will have opportunity to make a careful investigation of present conditions in order that the bill may be as perfect as possible when finally reported.

The new draft of the Lovering bill, which has just been introduced in the House, contains three important modifications of the original measure, consisting of the remodeling of Section 1, which provides for general drawbacks; the elimination of Section 2, which provided that "the drawbacks allowed under existing law on refined metal withdrawn from bonded warehouse . . . and used in the manufacture of articles exported from the United States shall be equal to the amount of duties which would have been remitted had such refined metal been exported direct from said bonded warehouse in an unmanufactured state"; and the introduction of a new section relating to the inspection of goods offered for drawback.

In recasting the general drawback section, Mr. Lovering has extended its provisions so as to cover payments of drawback on articles which may be "produced" as well as "manufactured" in the United States of imported duty-paid materials. Readers of *The Iron Age* will remember that numerous instances have recently come to light of the very narrow construction of the drawback law, in which it has been held that exported articles in order to be eligible to drawback must be wholly "manufactured" in this country. Under this construction of the law drawback has been refused on imported appliances attached to locomotives, cars, motor wagons, &c.; on boxes for the casing of cans of petroleum made from imported shooks cut in approximate lengths before being imported; on borax used in the curing and packing of exported meats; on bottles used as containers for exported liquids, &c. The producers of the articles referred to have found it impossible to get into the foreign market unless permitted to utilize certain imported adjuncts, and as the spirit of the drawback law is that American producers shall thereby be enabled to compete with their foreign rivals on a basis of untaxed materials, Mr. Lovering is of the opinion that whether an article is manufactured or merely produced for export it should be eligible to drawback of the duty paid on the imported constituents. The general drawback section of the bill therefore has been remodeled to read as follows:

That when imported duty-paid materials used in the manufacture or production of articles manufactured or produced in the United States cannot be specifically identified by the manufacturer or producer as having been used in the manufacture or production of any particular article or articles of a lot so manufactured or produced, as required by the regulations established under section 30 of an act entitled "An act to provide revenue for the Government and to encourage the industries of the United States," approved July 24, 1897, a drawback may be allowed on the exportation of such articles equal to the duty paid on a quantity of imported materials used as herein provided, equal to the quantity of like materials appearing in the exported articles, which like materials must at least equal in kind, quality and productive and effective or mechanical value such imported duty-paid materials.

Provided, That where both imported and domestic materials are blended in the manufacture or production of articles or parts of articles for the purpose of manufacturing or producing articles of a special grade or quality, the relative quantities and proportions of the materials used must be shown by the manufacturer or producer for use as a basis for determining the quantity of imported material on which drawback may be allowed.

And provided further, That where imported materials have been used under the provisions of this section such materials must have been imported by the manufacturer or producer of the exported articles, or must have been traced to the possession of such manufacturer or producer for his use, and must be charged against the record of importation as required by regulations established under section 30 of the Tariff act approved July 24, 1897.

Section 3 of the original bill has been eliminated because of certain objections to its enactment raised by the Treasury Department. Under the present law a greater amount of duties is remitted on refined lead exported direct from a bonded smelting warehouse than is allowed on the same metal if withdrawn for domestic consumption, and the original Lovering bill provided that an equal amount should be allowed in each case. The Treasury Department is opposed to this modification and it has therefore been omitted from the revised draft of the bill.

In order to throw additional safeguards about the administration of the drawback laws a new section has been added to the Lovering bill at the suggestion of Deputy Naval Officer Sage, who recently appeared before the Ways and Means Committee. This section provides facilities for a more thorough examination of goods offered for export whenever the nature of the articles makes it desirable. This provision is as follows:

Section 6. That whenever the Secretary of the Treasury shall hold that the safety of the revenue demands that articles which are to be entered for exportation with benefit of drawback of either the customs duties paid on the imported materials or of the internal revenue tax paid on the domestic alcohol used in their manufacture shall be subject to more careful inspection and custody than is practicable in case of factory, store or wharf examination, he may in his discretion require that such articles be deposited by the owner or shipper in any bonded warehouse provided for the deposit of like imported merchandise subject to customs duties, which articles so deposited shall be subject to conditions of official custody, examination and withdrawal for exportation or consumption as are provided for like imported merchandise, such deposits, custody, examination and withdrawal to be done under such regulations as the Secretary of the Treasury shall prescribe. All provisions of the law, relative to the bonded warehouses described herein, limiting the use of such warehouses to the storage of imported merchandise subject to a customs duty, are hereby so amended as to permit the deposit in such warehouses of the articles made by the provisions of this section, subject to the discretion and order of the Secretary of the Treasury.

Secretary Shaw's favorable recommendation of the Lovering bill will have the effect of liberalizing the rulings of the Customs officials under the present law and thus manufacturers will receive some benefit from the agitation of the subject, even though action on the measure is not taken until some time after the reassembling of Congress.

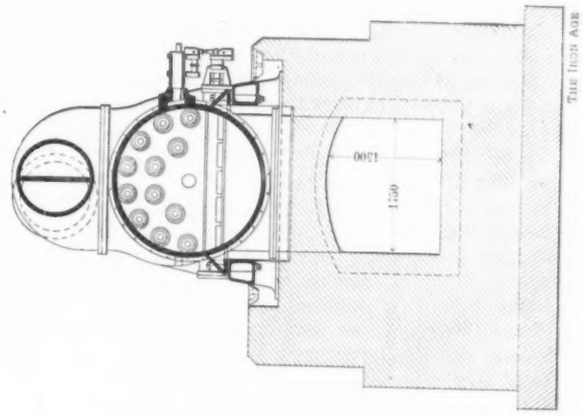
W. L. C.

**The Standard Roller Bearing Company.**—The Standard Roller Bearing Company of Philadelphia, Pa., having found their present facilities inadequate to meet the growing demand for their product, have purchased a piece of trackage property near the center of the city, about ten minutes ride from the City Hall, on the main line of the Pennsylvania Railroad, where they will build a very large factory for the manufacture of their roller bearings. The principal buildings will consist of two factories 200 feet long and 60 feet wide. Work has already been started and it is the intention of the Standard Roller Bearing Company to eventually build still further, covering the entire property of about 2½ acres within a short time. The Ball Bearing Company, also of Philadelphia, recently removed from Boston, will occupy a portion of the new plant, which will be specially arranged to meet their needs.

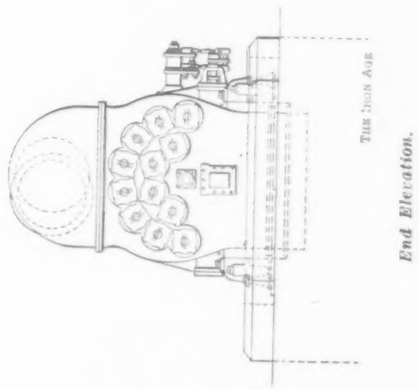
The announcement is made that the autumn meeting of the Iron and Steel Institute will be held at Duesseldorf on September 3 and 4.

## A German Gas Driven Blowing Engine.

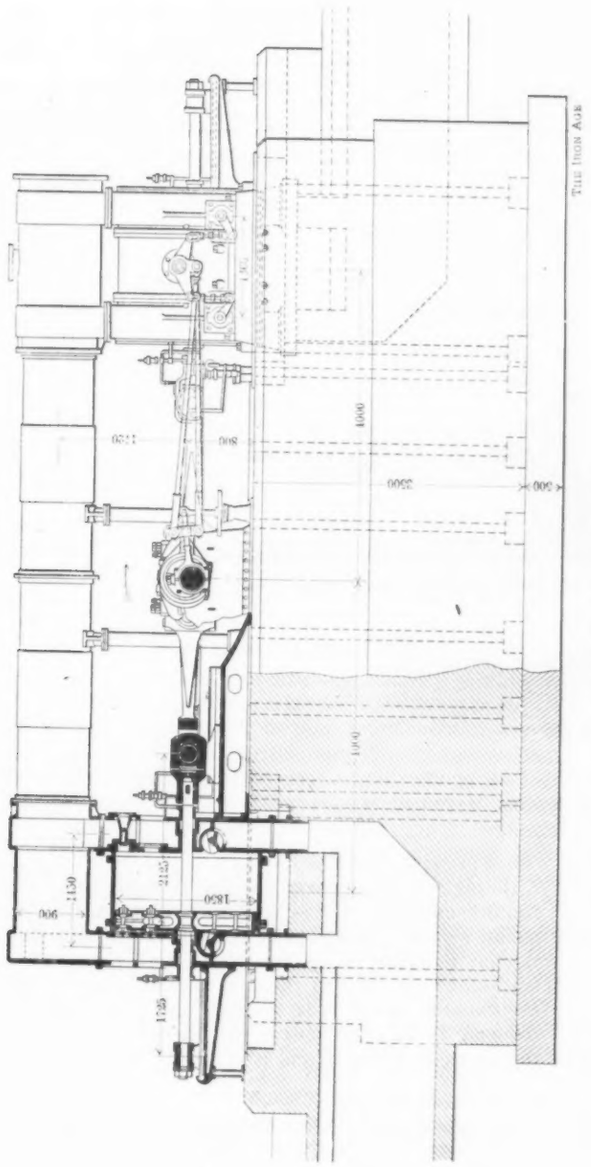
At the Duesseldorf Exhibition there is shown a blowing engine driven by a gas engine which well represents the most recent developments in this field, in which the Germans have been so active. The Gutehoffnungshuette of Oberhausen II, Rhenish Provinces, are the exhibitors. The blowing engine, which was built at the Sterkrade plant of the company, is coupled to a 1200 horse-power gas engine furnished by the Gasmotorenfabrik Deutz. Our illustrations show the construction of the blowing engine proper. They are reproduced from *Stahl und Eisen*. The pistons of the two blowing tubs, which face one another, are driven by a common shaft, coupled direct to the shaft of the gas engine. The specifications for the blowing engine were that at the normal speed of 135 revolutions per minute it must compress 1000 cubic meters, or 35,300 cubic feet, of air to a pressure of 0.5 atmosphere, and must be capable of increasing that pressure to 0.7 atmosphere without putting more work



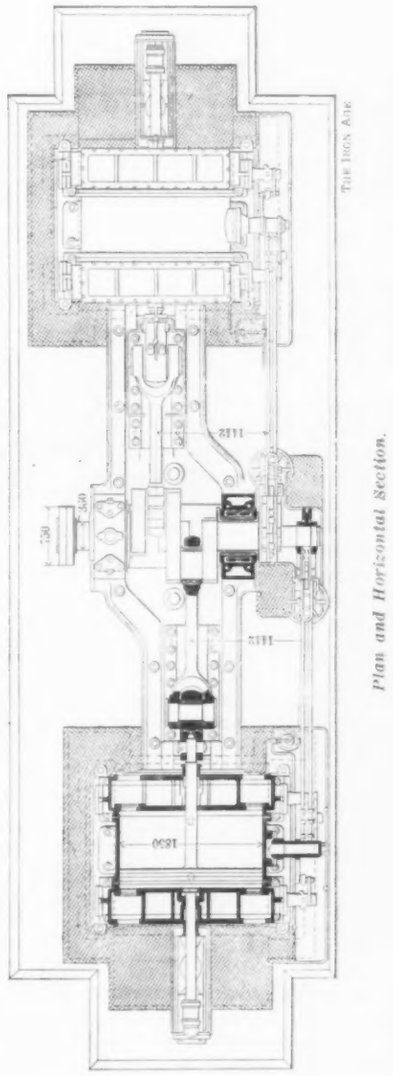

*Cross Section.*




*End Elevation.*




*Side Elevation and Section.*




*Plan and Horizontal Section.*

A GERMAN GAS DRIVEN BLOWING ENGINE.

upon the gas engine. This latter condition calls for a lessening of the quantity of air drawn in to 700 cubic meters, or about 24,700 cubic feet. With a stroke of 750 mm., or 295 inches, this makes the diameter of the blowing tubs 1850 mm., or 6 feet 8 inches. The inlet valves are of the Corliss type, while the outlet valves are the Stumpf patent. The valves which open to the interior of the cylinder are closed by rubber disks which are attached to the piston. The maximum lift of the valves is 1.02 inches, the weight of the valve being only 5 pounds, with an outside diameter of 10.42 inches. The valves are made of forged steel, there being 12 of them in each cylinder cover. Valves made from this design have been in use in a steel works blowing engine of a plant in Lorraine since September, 1900, and have worked well since.

In order to meet the condition that it must be possible to raise the pressure to 0.75 atmosphere the gear of the suction valves is made adjustable.

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The South Carolina Interstate and West Indian Exposition, which closed May 31, gave the following awards to the American Steel & Wire Company: Ten gold medals for merchants iron and steel, cold drawn steel shafting, horse and mule shoes, wire nails, rail bonds, wire rope, machinery and appliances for drawing wire, springs and spring wire, copper, iron and steel and aluminum wire; four silver medals for bicycle and automobile spokes, rolled wagon skeins, underground and overhead wires and cables and metallurgy of zinc; four bronze medals for music wire, coal and coke bale ties and chemicals and colors and a diploma of merit for installation in commerce building.

## The Faber Sensitive Bench Tapping Machine.

The sensitive horizontal or bench tapping machine designed by A. E. Faber, Jr., of 355 Mulberry street, Newark, N. J., and intended for rapid tapping of light work, is here illustrated. The salient feature of the machine is that holes can be tapped to the bottom without any fear of breaking the taps. The tap holder H is carried by the cap G, which screws on the end of the spindle. In the cap is the fiber friction F, placed between the end of the chuck shank and the driving spindle. The cap is screwed against this friction tight enough to drive the tap to the bottom of the hole, but is not sufficient to break the tap after it reaches the bottom, when the chuck stands still. The device is driven from the pulley A through the bevel gears B C and D arranged as shown. Rigidly mounted on the spindle E is a positive clutch member placed between the gears B D. Now, when the tap has reached the bottom the operator moves the central clutch member to the left, reference being had to the drawing, when it is brought into engagement with the gear D. By this means the direction of rotation of the chuck is reversed and it is withdrawn.

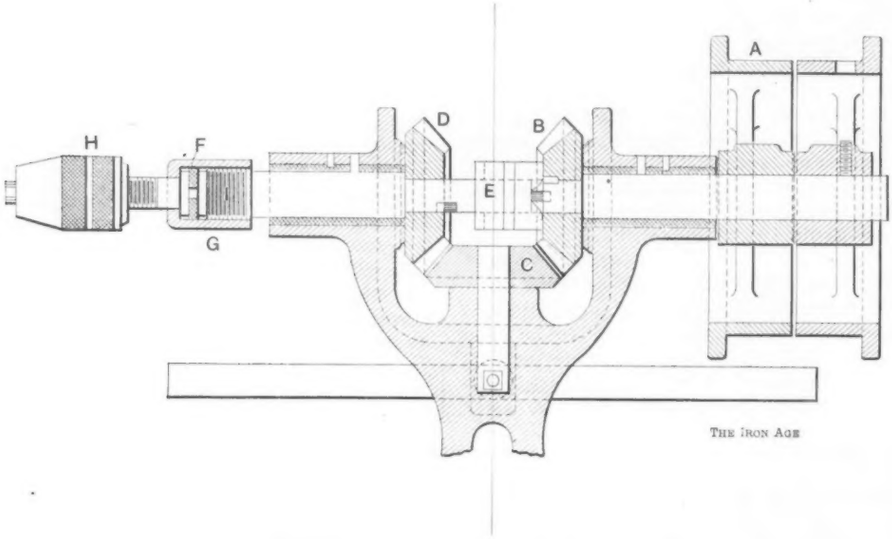
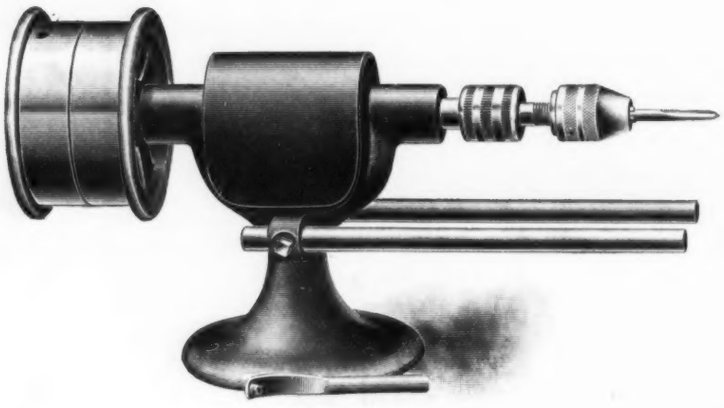



*Fig. 2.—Vertical Longitudinal Section.*



THE FABER SENSITIVE BENCH TAPPING MACHINE.

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**Vulcan Crucible Steel Company.**—The new plant of the Vulcan Crucible Steel Company, at Aliquippa, Pa., has been completed and is now in full operation. The concern are already in receipt of large orders for their brands of crucible tool steel, which they will market under the special brands of Vulcan Tool, Vulcan Extra and Vulcan Special. A number of large users of tool steel made thorough tests of the products of this concern with very satisfactory results.

# The British Iron Trade Commission.

### The Report on the Visit to the United States.

LONDON, June 21, 1902.—The report of the Commission appointed by the British Iron Trade Association to inquire into the iron, steel and allied industries of the United States is at length out. The Commissioners are to be congratulated upon their promptitude in producing an exceedingly valuable addition to the literature of the iron and steel trades in so short a time. The report extends to no less than 583 pages, and from beginning to end is chock-full of detailed accounts of American iron and steel practice and methods. The four gentlemen comprising the Commission were Ebenezer Parkes, M.P. of West Bromwich, Axel Sahlin of Millom, Enoch James of Wednesbury, and J. Stephen Jeans of London. To each Commissioner were assigned certain subjects. E. Parkes, M.P., reports on sheet and bar mill practice, Axel Sahlin on blast furnace practice, Enoch James on general steel works practice, while J. S. Jeans deals with the general economic and industrial conditions of American iron and steel trade. Before coming to the various opinions expressed by the Commissioners it is perhaps only right to give full publicity to the acknowledgments which these gentlemen make of American help and hospitality. Speaking of their reception: "The members of the Commission feel that they cannot speak without such a sense of gratitude and appreciation as would perhaps be difficult for those who have not enjoyed similar experiences at the hands of our American cousins to understand. The Hon. Abram S. Hewitt told the members of the Iron and Steel Institute when they were the guests of the American iron industry in 1890 that they would find the latch string on every door. We, who were not invited guests and who were there with the avowed purpose of appropriating all the best ideas and systems we might come across in the course of our wanderings, had exactly the same experience, with one or two exceptions of so trifling a character as hardly to be deserving of notice. Speaking generally, our American friends appeared to be just as ready to impart information as we were glad to receive it, and this is true, not of managers of iron and steel works alone, but of those engaged in allied and collateral industries as well. The perfect candor and absence of reserve, the unqualified readiness with which all questions were answered, the unhesitating consent given to applications for plans and illustrations, and the unmistakable friendliness and cordiality of our reception made it hard to believe that we had not absolutely identical interests, instead of being keen rivals and competitors in almost every market."

### Economic Conditions.

It will not be doing the other gentlemen an injustice if I say that in some respects the most important section of this large report is that contributed by J. S. Jeans, secretary to the British Iron Trade Association. The general report of this gentleman runs to no less than 390 pages and covers a very wide range. After a statement of the outline of his inquiry, J. S. Jeans deals fully with such questions as Raw Materials, Mineral Royalties, Labor Conditions in the United States, Organization and Administration of Industrial Affairs, Transportation Systems and Conditions, the Cost of Producing Iron and Steel in the United States, the Manufacture and Treatment of Finished Steel Products, Trusts and Consolidations, the Basic Steel Industry, various economic Problems such as Currency, Credit Banking, the Social Conditions of Workmen, American Products in Foreign Markets, the Tariff System of the United States; all these topics being carefully and systematically divided into a number of subheads. In his general introduction and outline we get pretty clearly J. S. Jean's point of view. In stating the elements of the inquiry he says:

"In the United States, paradoxical as it may appear, we have to face conditions that make at once the dearest and the cheapest labor that is probably to be found in any part of the world—the dearest in respect of nominal remuneration, the cheapest in respect of industrial and economic results. The following pages will necessarily be largely devoted to an explanation of this apparent paradox. It is their purpose to demonstrate how American ironmasters and engineers have been able to so discipline and apply the labor at their command as to reconcile high wages with cheap production in a degree not hitherto attained elsewhere."

A point that strikes me as worth further treatment is raised in the general introduction and deals with population and pig iron. The writer is anxious to discover what prospect there is of a glut and a consequent fall of prices following upon recent abnormal activity. The test he applies is the increase of *per capita* consumption from period to period. In this regard he says:

"In 1867 Abram S. Hewitt computed the population of the world at 1,000,000,000 and the consumption of iron at 20 pounds *per capita* per annum. In 1900 the population of the world was probably 1,200,000,000, and the total consumption of iron in the form of pig was over 42,000,000 tons, which gives an average *per capita* consumption for the year of close on 80 pounds, or four times the average consumption 34 years ago. In this remarkable advance there is good cause for being hopeful, if not confident, as to the scope that exists for the continued development of the iron industry in the time to come—the more so that some countries, and notably the United States, are approaching 400 pounds *per capita* per annum, or five times the general average of mankind. Indeed, some statistical authorities, who have investigated the relation of population to pig iron supply, have reached the conclusion that in a few years' time there will be a danger of famine, unless new and hitherto undeveloped sources of supply are opened up, and C. M. Schwab recently expressed the opinion that steel has many worlds yet to conquer and will come into use for an ever increasing variety of purposes in the future."

It will be observed that J. S. Jeans, on the whole, commits himself to the general theory that the world's demand for iron and steel is likely to increase rather than diminish. But on turning to some comments on the United States Steel Corporation, he, in commenting upon the large profit of $55,000,000 for the first six months of its existence, inquires:

"Is it not then justifiable to assume that if the Steel Corporation only earned £11,000,000 sterling as net profits in six months of such good trade as that above specified, when they might be expected to have a chance of earning at least £20,000,000 sterling a year in excess of the actual prices current in depressed times, the apparent possible profits under ordinary conditions and former prices in those times would, *ex hypothesi*, not exceed £2,000,000 sterling, subject to modifications in wages and a few other charges, which would hardly do more than pay 2 per cent. on the £110,000,000 sterling of 7 per cent. cumulative preferred stock? And if the corporation had to face six or seven years of bed rock prices on these terms, where would their prosperity be and how would their chances of continued life be affected?"

The two statements are not quite mutually exclusive, but they come near to it. I mention the point, as it seems to me to indicate one essential difference between the British and the American point of view. The Americans—rightly or wrongly—believe in the future of the iron and steel industry, and the United States Steel Corporation have been financed on that basis. The English critic admits that there is a great deal in the contention, but still thinks of the dangers of seven years of bed rock prices, with the result that upon such an important matter as trusts and consolidations his opinions remain fluid and inconclusive. In another place J. S. Jeans remarks that "the Steel Corporation now supplies a mechanism for steadying values which have never before existed. That great organization are fully aware of the ultimate value of their resources in raw materials and otherwise, and they are not likely under pressure of panic or financial stringency to part with their property in any shape or form for less than its normal value." There would seem to me to be a shifting of the point of view in these comments upon the trust,

with the result that any British manufacturer reading up this section of the work would hardly be in a position to form a definite conclusion in his own mind whether it were wise or unwise to take part in the formation of a great British trust.

**The Strenuousness of American Life.**

On the purely human side of the inquiry, there are some interesting comments upon American habits of life, not only by J. S. Jeans, but also by Axel Sahlin. The former remarks:

"One of the notable characteristics of the principal cities and industrial centers of the United States is the comparative absence of a leisured class, such as may be found in every country in Europe. The typical American appears to live only to work, and to work at something that will be a life-long career of usefulness to himself as an individual, and to the community as interested in mechanical improvements and economies. In the great manufacturing cities a man who has no regular business, who is not concerned in the development of some industry, who is not an agriculturalist, a railway man, a manufacturer, or engaged in a profession, is more or less at sea. He will find it much more difficult than in any European country to get men of character, capacity and intelligence to share his leisure in ordinary working hours, however learned they may be."

Axel Sahlin, in a chapter in his report on "Direction, Management and Labor," was struck with very much the same thing. He says:

"In America, the personal factor in iron making is recognized to be fully as important as that of plant. It is not the guns which win the battle, but the men who stand behind them. A good weapon, poorly aimed, is not dangerous, but neither will it do to arm good fighters with obsolete guns. In the above report I have tried to show that the guns—that is, the plants—are splendidly and powerfully equipped, that raw materials are plentiful and good, and that the system of transportation and handling is unexcelled. In this chapter I wish to speak of the men as I have learned to know them during 20 years of association. . . . I have often heard it erroneously stated that the Americans worship dollars. This is not so, because a rich man as such is not greatly esteemed. What the American admires and honors is the ability to do; that capacity in a man, through his own sagacity, nerve, enterprise and skill to create and employ a fortune. Nobody in America seems to feel above his work or degraded by it. As it is done, and as is the result obtained, so is the man esteemed by his fellow men, and such is the place he will make for himself in his community or in his country. Everybody works, and works for the sake of work; and thus there has been produced in America in the short space of one generation an industrial potentiality which is more wonderful and more to be feared than the works and plants which these same workers have created. Nowhere is the struggling youth more kindly encouraged, more readily trusted, more generously aided, more gladly made place for, than in America, and when I say this I speak from personal experience, and with gratitude in my heart toward many of those busy and keen, but also generous and broad-minded American men of affairs." And again:

"Among American managers is often found a reminder of the college spirit and comradeship of youth. Each man feels attracted to his fellows working in the same field. They meet, exchange views to mutual benefit, and are always ready either to ask or to give each other assistance or information. To this fellow feeling contributes greatly the congenial and hearty tone prevailing at the meetings of the American engineering societies first, and last the American Institute of Mining Engineers. Few of us who have been privileged to meet and know the men who are the leaders of this society but can thank them for many a friendship and many a hint which has helped to make our professional life more easy or more profitable. As an example of this spirit it happened, during my recent stay in America, that an isolated, large modern blast furnace, through a serious breakdown, came near being chilled. There were only two men to divide the disheartening work of trying to save the furnace—the manager and his assistant. Both soon became thoroughly worn out, and their bodily fatigue was reacting on their spirits. One blustery afternoon, two young blast furnace managers, both with fine reputations and excellent records, appeared at the furnace, having come from a distance, traveling bag with working outfit in hand. 'Say, old man; we heard you had trouble, and we know you are short handed; we came up to see if we could not take shifts and do what we can to help pull you through.' And be it said to the honor of the manager in trouble, he was not too vain to accept the offered assistance which his neighbors had shown the good will and faith in his broadmindedness to venture to offer."

These quotations crystalize the ideas upon the human side of the problem which the British Commissioners brought back with them, but all through the book it would be easy to pick out similar statements. J. S. Jeans, while receiving much information from Americans, was evidently not above returning the favor by a little advice. For example, he says that several Americans spoke to him in deprecatory language of the not uncommon practice in British works of providing a daily lunch at the offices for the heads of the departments at which stimulants were taken. They declared it to be impossible to conceive of a man being as alert and capable after partaking of alcohol, whether as wine, whiskey or beer, as he would be without it, and the argument was that this British practice caused the efficiency of the work to suffer. But the writer, while granting the relevance of the remark, genially retorts, "At the same time I cannot but think that the Americans in this criticism overlook or minimize what is probably to the average man the more debilitating effect of their own continual smoking. In most of the works I visited, and especially in Pittsburgh, where 'Toby' cigars are cheap, I found that nearly all the officials were greatly addicted to smoking, and that they smoked everywhere, both early and late."

**American Publicity vs. British Reticence.**

Axel Sahlin in particular was struck with the general habits of frankness prevailing everywhere. Talking to a very able young manager about his giving information regarding working conditions and results, he received the answer, "It would be stupid of me to refuse a colleague information. I am now doing as well as I know how. If any one else by the help of the knowledge of what I have accomplished can improve on it, the benefit is mine and I will improve with him. No one man can know it all." J. S. Jeans was also struck with the frankness with which American manufacturers made known the contracts they had succeeded in securing. In Great Britain there is, of course, a decided objection to make known what manufacturers are doing. In discussing this question, he remarks: "In any case, it is probable that the American system is better calculated to assure the success of American trade, inasmuch as it not only enables the whole world to learn what the Americans are doing, but it also leads to the inference that their rivals, whether British, German or Belgian, are unable to compete with them, and nothing is more natural than that this fact should lead to the purchasers of the manufacturers thus heralded to believe that American goods are cheaper or better, or both." Nor would it be right to omit a little sting in the tail of these observations: "Another consideration that has been not a little hurtful to British traders is the fact that in a number of cases incorrect statements have been made in the public press as to contracts having been booked by Americans, whereas those very contracts had fallen to British firms."

**American Labor Conditions.**

The commissioners would appear to have fallen out in their observation upon American labor. J. S. Jeans draws comparisons as between British and American labor which are all in favor of the American. He regards the American attitude as being that of individualism and the British that of collectivism. The American workman, in the writer's view, stands for himself; the British workman for his union. In the broad and abstract result the American aims at doing as much as

he can in order that his position may be as far as possible improved thereby, while the British workman is held under the thrall of a system of which the fundamental and controlling principle is that the workmen shall do as little as possible, or at least that there shall be a leveling down from the best to the worst capabilities of labor rather than a leveling up from the worst to the best. Axel Sahlin quotes with approval the words of President Roosevelt in his recent message to the United States Congress: "American wage workers work with their heads as well as their hands. Moreover, they take a keen pride in what they are doing, so that, independent of the reward, they wish to turn out a perfect job. This is the great secret of our success in competition with the labor of foreign countries." He adds: "But the American workman, often brought up in the self respecting home of comparative comfort, educated in a good school, having breathed from childhood the atmosphere of independence and self reliance which is the unique blessing of America, and having been taught that he is an equal in rights and opportunities with any other man in the land, is not, generally speaking, going to rest content to be a hewer of wood and a drawer of water." The result of this, in Axel Sahlin's opinion, is that while the American may be a foreman, master mechanic or what not, the actual American is in a minority in American blast furnaces. For the heavier duties the negroes are employed in the South and at the Northern furnaces Irish, Slav or Italian immigrants. The material available in America for training blast furnace hands is, therefore, in the writer's opinion, not as good as is found in England, Germany or Sweden. But when we turn to the report of Enoch James we get the following downright judgment, which is evidently in complete opposition to the views of his colleagues:

"The workmen at American works are generally supposed to be working much harder than they do in this country, but this is not my own view. After much conversation with many men in various branches who had been employed in similar works in England, and some of them subject to my own control, the conclusion I have arrived at is that the American workmen do not work so hard as the men in England. They have to be attentive in guiding operations and quick in manipulating levers and similarly easy work. They are also much more desirous of getting out large quantities than they are in England. All steel plants and rolling mills work longer hours—starting at 6 p.m. on Sundays and keeping running until 4 or 5 o'clock on Saturdays. Men are more abundant, and the various operations are so much simplified that an experienced man is not required to conduct any part of the process. They are better paid and are more regular in their attendance at the works, loss of time through drinking habits or otherwise not being tolerated. More and closer supervision was noted, for the workmen in America do not act upon their own judgment, but carry out the instructions given to them; and labor is subdivided to such a large extent that each man has an allotted part and does not interfere with any other. At some rolling mills when the least thing goes wrong with the machinery the roller does not attempt any adjustment, but leaves that to some one else."

Enoch James puts down the improvements and methods of working in America to energetic and competent superintendents, who have mastered their own conditions and adapted their tools to the special requirements of each particular case.

### American Products in Foreign Markets.

It was natural that the commissioners should consider the prospect of American competition invading the neutral markets of the world. In point of fact, however, there is not much light thrown upon the prospects of American foreign trade. The note on this point is hesitating and inconclusive. For example, J. S. Jeans says: "It is unquestionable that the tariff has greatly helped the recent increase of exports." Has it? I am inclined to doubt the proposition. As a matter of fact, it is far more probable that the tariff has greatly retarded the increase in American exports. Again, the same writer remarks that "There does not at present appear to be any solid guarantee of stability in the American exports of iron and steel, first, because there is no assurance that the tariff will be maintained; secondly, because without the tariff American manufacturers could not rely on exporting with profits, and, thirdly, because the trade of the United States, as at present constituted, is likely to be intermittent and irregular, and no trade can be so well founded as that which is least liable to extremes of value and volume." Here, again, it is difficult to follow J. S. Jeans on any of these general propositions. It would, I think, be difficult for him to maintain any of them. He next quotes an editorial in *The Iron Age* of seven years ago, in which it is contended that American manufacturers will have to treat the foreign markets as slaughter ground for a surplus or as a means of reducing cost of enlarging business, and thus running up to full capacity. J. S. Jeans thinks that, on the whole, the American export of metal goods has not been exported on the average at a remunerative profit. It is difficult to reconcile these various statements with J. S. Jeans' admission that as the result of the organization of the steel industry into the United States Steel Corporation that the markets have been steadied and serious fluctuations obviated. He says further:

"In considering the natural conditions at the command of the United States for the development of an export trade, it is not likely to be overlooked that in that country there are only two steel plants on tidewater—one at Sparrows Point, Baltimore, and the other near Wilmington, Del. The ore for these plants is brought long distances oversea. During the last three years much of it has been obtained from Canada and some of it from Cuba. Neither of these concerns have bituminous coal within 200 miles of their furnaces. The principal group of works that have hitherto done the bulk of the export trade, in finished products especially, is in the Pittsburgh district, nearly 500 miles from New York, which is their principal shipping port, although Birmingham, Ala., which is looking forward to the development of an export trade in finished products, as well as in pig iron, is little more than half that distance from ports that are likely to have a future. Meanwhile at these Southern ports the command of tonnage is uncertain and precarious."

Turning now to Axel Sahlin, he expresses the hope that the Steel Corporation will make the world their debtor by using their great influence in their own interests, as in that of others, to prevent and minimize sudden fluctuations. So far as competition is concerned, however, this gentleman is distinctly sanguine. He says:

"There is no point in the world that need teach Middlesbrough a lesson in the cheap production of iron and steel. The Durham coke, if properly made, is equally good, if not better, than that of Connellsville. The collieries and coke ovens are nearer to the Tees than is Connellsville to Pittsburgh. The Cleveland hills yet contain a goodly store of iron ore, if also the grade is going down. To enrich the mixtures the Scandinavian mines, considerably nearer to Middlesbrough than are the Lake Superior fields to Pittsburgh, supply an even richer and better raw material. In the opposite direction Spanish hematites are available with easier transport than that of the lake ores. Middlesbrough has also the advantage over Pittsburgh of being located on the sea and in the midst of the densely populated European countries. If, therefore, the Middlesbrough ironmasters adapt—not copy—American methods, not only as regards furnace plants and steel works, but also, and of still more importance, as regards generous employment of money, consolidation of interests, control of raw materials, selection of managers and treatment and control of labor, they should never need fear competition from an industrial center situated 3500 miles away from the markets at their very door, and this opinion, I take it, will also hold good for South Wales, the Midland districts and Scotland."

But these optimistic remarks seem to me to take too readily for granted a continuance of rich raw material supplies for the English market. So far as the competitive relations between Great Britain and America are concerned, one more quotation must suffice. J. S. Jeans,

in his chapter "Some Final Facts and Considerations," says:

**English Plants Unexcelled.**

"The allegations of British backwardness and want of enterprise are not justified to anything like the extent that some notable pessimists suppose. There are in Great Britain, to my knowledge, finer works in many branches of engineering than are to be found in the United States. America has probably no counterpart worthy to rank with the works of Armstrong, Whitworth & Co., whether at Newcastle-on-Tyne or at Manchester. This, however, is hardly a concern that is typical either in their markets or in the character of their products. There are others. What American works can compare in their own special line with the works of Platt, at Oldham, and the works of Howard & Bullough, at Accrington? What American tube works are better organized than those of Stewart & Menzies, at Glasgow, apart from mere size? What pipe foundries excel those of the Staveley Company? What pump works can claim to be more up to date than those of Joseph Evans & Sons, at Wolverhampton? What locomotive works are better equipped than those of Neilson & Dubs, at Glasgow? And so in many other branches of the iron and engineering industries. Not only can Great Britain make claims for her principal works, such as those referred to, but those claims are likely to be emphasized by the new plants now being constructed to deal with those industries enumerated. The new works of the Westinghouse Electric Company, at Manchester, or of the Thomson-Houston Company, at Rugby, are cases in point; and at Rugby, also, are the magnificent new engine works of Williams & Robinson, of which it may at ance be said that it would be hard to go one better. Most of our great industrial centers can claim similarly model establishments. Those we have named are only put forward as types; not, of course, of the rank and file, but of the best of their kind, although they are far from being alone. Then, again, what lack of enterprise is shown on the part of the leading firms in the steel trade who have taken up the Talbot and Bertrand Thiel processes? At the time of my visit to the States only one firm had actually started the Talbot process, and none that I heard of had essayed the other. A second Talbot furnace was then being erected. In this country, the Frodingham, Dowlais and Weardale companies are adopting the Talbot process, and I am informed that two other firms are proceeding to install the rival process, while the Monell process has also been adopted on Tees side. The conclusion to be drawn from the recent attitude of British iron and steel manufacturers in regard to new improvements appears to me to be favorable to the future of those industries. Probably no authorities have taken greater pains to inform themselves as to that future, as liable to be influenced by American competition, than those who have been concerned in the recent consolidations in South Wales. Have these gentlemen sat down and folded their hands despondingly? Have they not been stimulated by what they saw and learned in the United States to take steps which implied a large amount of confidence in the future? And is not the same inference justified by similar action on the part of many other leaders of the trade, including those responsible for the destinies of that almost historic corporation—the Weardale Steel, Coal & Coke Company?"

**A Critical Conclusion.**

With this rather long vindication of British progressiveness I must draw this very cursory review of a most interesting book to an end. Into the technical part I have not entered. I have no doubt that American iron and steel manufacturers will greedily obtain the book and find out, each in his own department, the exact value of the comments made upon the various processes. Taking the book as a whole, it is beautifully printed. In J. S. Jeans' report there are no less than 80 illustrations; in Axel Sahlin's, 46; in the report of Enoch James, 25, and of E. Parkes, M.P., 6. A large proportion of these are photographic reproductions, but the technical printing is all that need be desired. In the days to come I am not at all sure if this report will not be valued both in America and England as a fairly accurate representation of the exact position of the American iron and steel industry in the autumn of the year 1901.

As a criticism pure and simple, I am inclined to think that the book lacks decision. The commissioners say, in effect: "In America they do so and so, and this or that," but there are from start to finish no practical proposals upon which energetic British business men might think of building up a new practice. It is perhaps asking too much that the commissioners should do this; but had the commissioners done it we should have been additionally grateful. S. G. H.

## Leading Stockholders of the United States Steel Corporation.

In the course of the suits now pending over the proposal to convert preferred stock of the United States Steel Corporation into bonds lists have been published enumerating the largest holders of the stock. These include, of course, many banking firms, in whose name their customers carry their securities, which we have omitted from the following:

| | Shares. | |
|---|---|---|
| | Preferred. | Common. |
| Charles T. Barnes | 5,000 | .... |
| C. F. Battelle | 5,055 | 9,555 |
| William W. Blackburn | 6,000 | 1,600 |
| S. W. B. Boocock | 3,409 | 2,625 |
| Henry B. Bope | 4,542 | 2,167 |
| Lewis T. Brown | 4,630 | 3,161 |
| J. I. Burke | 8,390 | .... |
| H. G. Bechtel | 5,000 | .... |
| Daniel M. Clemson | 19,862 | 7,805 |
| Alfred Clifford | 5,670 | 51 |
| Edmund C. Converse | 10,061 | .... |
| James C. Converse | 11,360 | 5,396 |
| Louise K. Converse | 3,270 | 2,156 |
| William E. Corey | 5,000 | .... |
| John Eaton | 10,125 | .... |
| William S. Eaton | 2,859 | 2,624 |
| W. Edenborn | 33,450 | 88 |
| John C. Fleming | 6,787 | 5,000 |
| H. C. Frick | 100,000 | 50,001 |
| J. W. Gates | 16,000 | 100 |
| James Gayley | 12,300 | .... |
| F. J. Hearne | 6,503 | 625 |
| Laura F. Hearne | 4,050 | 1,980 |
| Millard Hunsiker | 5,787 | .... |
| W. A. Jennings | 20,106 | 16,072 |
| George C. King | 5,000 | .... |
| Francis T. F. Lovejoy | 13,851 | 1,800 |
| A. S. Matheson | 9,261 | 2,285 |
| William A. Merrick | 7,253 | 3,699 |
| Thomas Morrison | 21,000 | 4,000 |
| George E. McCague | 6,787 | 2,035 |
| William H. McCord | 5,707 | 2,724 |
| M. K. McMullen | 5,765 | 4,792 |
| George G. McMurty, as president American Steel Company | 2,348 | 2,348 |
| J. W. Nichols | 28,455 | 9,286 |
| David B. Oliver | 9,150 | 9,000 |
| Geo. T. Oliver | 17,100 | 18,100 |
| Henry W. Oliver | 50,000 | 35,000 |
| James B. Oliver | 16,195 | 14,802 |
| Alex. R. Peacock | 34,303 | 2,363 |
| Henry Phipps | 120,200 | 76,900 |
| John S. Phipps | 25,038 | 25,047 |
| William D. Ramsey | .... | 5,800 |
| George Reeves | 3,161 | 4,061 |
| K. J. Roberts | 9,267 | 18,600 |
| George G. McMurtry, as president American Plate Company | 17,000 | 3,750 |
| G. B. Salisbury | 1,520 | 4,355 |
| Charles M. Schwab | 50,001 | 5,000 |
| Joseph E. Schwab | 6,187 | 5,835 |
| James E. Scott | 6,787 | 4,235 |
| H. S. Sill | 7,523 | 260 |
| W. H. Singer | 43,442 | 39,906 |
| Chas. L. Taylor | 10,021 | 752 |
| S. H. Vandergrift | 4,614 | 2,185 |
| Alfred R. Whitney | 9,000 | .... |
| Henry Wick | 4,900 | 125 |
| Henry Wick, as president National Steel Company | 9,000 | 9,000 |
| Geo. P. Wilbur | 3,698 | 1,466 |

The trade will observe in this list many names prominently connected with the different constituent companies of the United States Steel Corporation, but particularly those of men now and formerly associated with the Carnegie Steel Company. It should be noted, however, that the list embraces only stockholders who have assented to the conversion scheme.

## New Publications.

**Jahrbuch fuer das Eisenhuettenwesen (Annual of the Iron Metallurgy).** Vol. I. By Otto Vogel, under the auspices of the Verein deutscher Eisenhuettenleute. Published by August Bagel, Duesseldorf, Germany, 1902.

The German Society of Ironmasters has just initiated a further important undertaking as supplementary to the splendid publication *Stahl und Eisen*. It is an annual volume summarizing the literature bearing on the technology of the manufacture of iron and steel. Kerpely, in Austria, has done such work before, and the Iron and Steel Institute prints abstracts in its two volumes a year. But this new undertaking of the German Society is somewhat more ambitious, since illustrations are a feature of it. The "Annual" takes in the whole range, including fuel, refractories, slags, ores, the manufacture of pig iron, foundry practice, puddling, steel manufacture, rolling mill work, physical properties, chemical composition and the testing of materials.

The work is done with characteristic German thoroughness and accuracy and the references are elaborate and selected in a critical spirit. There is a full authors' index in addition to the ordinary index, and the volume is well printed, well bound and carefully edited. We welcome the "Annual," since it promises to become an exceedingly valuable addition to the technical literature of the iron industry.

**The Art of Enameling on Metal.** By William Norman Brown. Publishers, D. Van Nostrand Company, New York, 1900. Price, $1.

Mr. Brown deals with this subject in six chapters, and supplies an index at the back of the book. In the first chapter we are told what enamel really is, and the history and description of enameling is given. Enamel is a thin coating of vitreous glaze applied to some background and forming either a colored ornament or an actual picture. The word comes from the French *émail*, originally *esmail;* Italian *smalto*, both from the same primordial root as the Anglo-Saxon word *smelt*. In Chapter II a very interesting dissertation is given on the various kinds of enamels—viz., the *Cloisonné*, the *Champs Levé*, the translucent and the painted. The first of these is the most ancient form. Briefly the *Cloisonne* consists of a flat plate of copper, gold or silver, upon which the pattern is made by brazing thin pieces of sheet copper or other metal, perhaps about 1-16 inch high, to the base plate. These thin upright strips of metal divide the spaces which are to contain the enamel just as fences divide field from field along a country road. The *Champs Levé* method uses a thicker base plate and the divisions are made by cutting out the metal of the plate between them, just as boys might excavate a shallow area of ground in order to hold the water necessary for a skating rink. Rinks of differing shapes, separated by narrow dykes, with ice representing variously colored enamels, would resemble the *Champs Levé* method.

Chapter III refers briefly to translucent enamels, which are described as composed of transparent enamels of every variety of color, laid in thin coatings over the design, which is incised in the metal, the figures being slightly raised in low relief and marked with a graver, so as to allow the drawing of the contours to be seen through the ground. Painted enamels are produced by a process similar to porcelain painting, except that the surface decorated is a metallic one, instead of biscuit porcelain. Next follows a description of the apparatus required for the work of enameling, furnaces and tools and methods. In fact, the book is intended more for the amateur than for the professional worker, though the practical way in which the subject is treated throughout commends it to the skilled hand as well as to the beginner. For instance, the amateur is cautioned that *Cloisonné* requires the worker to be particularly patient and painstaking, as it involves a very considerable amount of trouble and often yields very uncertain results, and the professional will notice what the author says about the possible danger that the "firing" of the enamels may weaken or impair the soldering of the metal divisions to the base and so lead to disaster.

The chapter on the composition and preparation of enamels gives what may be called "receipts," and goes on with the methods of doing the work of coating, "firing," designing and reproducing pictures or designs in enamel.

The last chapter includes designs for *Cloisonné* and painted enamels, and is very satisfactorily illustrated, as indeed the book is all through.

The efforts of amateurs the author clearly has in mind in dealing with this interesting branch of art, though he cautions his readers that its prosecution is exceedingly arduous. Even the mere student of this very ancient form of artistic representation of objects, natural or conventional, will be interested in the brief historical *résumé* which the little book of 58 pages contains. A hint is given, which is not enlarged upon, perhaps as it might be, to the effect that heraldic devices seem to lend themselves readily, at least, to reproduction in the *Cloisonné* method. Amateurs of sufficient manipulative skill and patience might be able to reproduce coats of arms in enameled plaques, or national emblems, as for example that belonging to Sir Walter Scott's native land, of which he poetically says, "The ruby lion ramps in gold."

## Trade Combinations in Australia.

United States Consul J. P. Bray of Melbourne, Australia, reports to the State Department that the Minister of Customs has introduced into the Australian House of Representatives the following amendment to the Australian customs bill. In all probability it will be concurred in by the Senate and become law:

Whenever the Governor-General has reason to believe that with regard to any goods there exists any trust, combination, association or agreement of any kind among importers or manufacturers of or dealers in such goods to unduly enhance their price or in any way to unduly promote the advantage of the importers, manufacturers or dealers at the expense of the consumers, the Governor-General may by commission empower any justice of the High Court or any judge of the Supreme Court of a State to inquire in a summary way and report to the Governor-General whether such trust, combination, association or agreement exists.

The justice or judge may compel the attendance of witnesses and examine them upon oath and require the production of books and papers, and shall have such other powers as are conferred upon him by the Governor-General for the purpose of such inquiry.

If the justice or judge reports that such trust, combination, association or agreement exists, the report shall be laid before both houses of the Parliament, and the Governor-General may, upon an address from both houses of the Parliament, by proclamation, direct that the goods shall be admitted free of duty or at such reduced rate of duty as will give to the public the benefit of reasonable competition in the goods.

At the annual meeting of the stockholders of the Ball Bearing Company of Maine, held last week at Portland, A. T. Batchelder and W. S. Rogers, formerly vice-president of the Roller Bearing & Equipment Company of Keene, N. H., were elected members of the Board of Directors. E. B. Caldwell, president of the Standard Anti-Friction Equipment Company of New York, also became a director and was elected treasurer of the company. Mr. Rogers informs us that within 60 days the company will be producing a new line of both ball and roller end thrust antifriction bearings. Mr. Rogers is president and general manager of the Ball Bearing Company of Maine, with offices at Keene, N. H.

Consul J. J. Langer of Solingen, Germany, reports that the manufacturers of cutlery in the Solingen Consular district have petitioned the tariff commission not to raise the duty on steel, claiming that steel used for the manufacture of better grades of cutlery must be imported from Sweden and Austria-Hungary, Germany not being able to supply the quality desired. They say that in event of a higher duty the manufacturers could not buy the foreign product, and would be unable to compete in the manufacture of the better grades of goods.

# The Iron Age

**New York, Thursday, July 3, 1902.**

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.


## Our Imports of Iron and Steel.

Few in the iron trade would have cared to commit themselves a few years since to a prediction that the United States would ever become a customer, to any extent, of foreign makers. Yet the extraordinary development in the consumption during the past nine months has once more made us an importing country. While the purchasing of foreign material began in the winter, it is only during recent months that the movement has been reflected in the statistics. We print below the imports during April and May of those lines of iron and steel the weights of which are given in the figures published by the Bureau of Statistics:

*Imports of Iron and Steel.*

| | April. | | May. | |
|---|---|---|---|---|
| | 1901. Gross tons. | 1902. Gross tons. | 1901. Gross tons. | 1902. Gross tons. |
| Iron and steel and manufactures of: | | | | |
| Pig iron | 3,335 | 19,067 | 4,817 | 30,708 |
| Scrap iron and steel fit only to be manufactured | 3,743 | 5,529 | 581 | 11,768 |
| Bar iron | 992 | 900 | 904 | 1,195 |
| Bars, railway, of iron or steel, or in part steel | 330 | 673 | 8 | 5,151 |
| Hoop, band or scroll | 2 | 130 | 62 | 5 |
| Ingots, blooms, billets, &c., n.e.s. | 436 | 11,987 | 711 | 24,383 |
| Sheet, plate and taggers iron or steel | 145 | 538 | 136 | 196 |
| Tin plates, terne plates and taggers tin | 3,494 | 5,436 | 4,953 | 6,380 |
| Wire rods | 1,057 | 1,293 | 1,944 | 2,174 |
| Wire and articles made from | 219 | 465 | 174 | 275 |
| Totals | 13,753 | 46,018 | 14,290 | 82,235 |

It will be noted that in May very respectable quantities of pig iron, scrap and steel billets were brought in. The statistics unfortunately do not specify such articles as structural material, of which we have also been importing quite freely.

Of course, we are still sending out some iron and steel under old contracts and continue to close new export business in some departments, as is shown by the following table:

*Exports of Iron and Steel.*

| | April. | | May. | |
|---|---|---|---|---|
| | 1901. Gross tons. | 1902. Gross tons. | 1901. Gross tons. | 1902. Gross tons. |
| Iron and steel and manufactures of: | | | | |
| Pig iron | 5,695 | 1,570 | 1,569 | 1,673 |
| Scrap and old, fit only for manufacture | 1,073 | 1,220 | 1,406 | 784 |
| Bar iron | 1,930 | 3,857 | 1,953 | 3,334 |
| Bars or rods of steel: | | | | |
| Wire rods | 57 | 1,466 | 1,079 | 2,741 |
| All other | 2,449 | 453 | 1,599 | 649 |
| Billets, ingots and blooms | 429 | 68 | 686 | 303 |
| Hoops, band and scroll | 142 | 196 | 297 | 152 |
| Steel rails | 41,389 | 4,501 | 42,530 | 8,031 |
| Sheets and plates: | | | | |
| Iron | 410 | 314 | 840 | 259 |
| Steel | 2,233 | 2,076 | 2,523 | 2,264 |
| Tin plates, terne plates and taggers tin | 30 | 92 | 17 | 133 |
| Structural iron and steel | 4,478 | 4,755 | 7,077 | 3,530 |
| Wire | 8,171 | 10,509 | 7,305 | 11,012 |
| Totals | 68,486 | 31,077 | 68,881 | 34,865 |

Our export trade naturally has fallen off sharply, as the figures given will prove. It is interesting, however, to note that the exports of wire are larger this year than they were during the corresponding months of 1901.

## Gold and the South African War.

When the Transvaal war began there were abundant predictions of disastrous effects upon business resulting from the shutting down of the gold mines. It is not improbable that the Boers relied a good deal upon the anticipated monetary stringency to strengthen the peace party in England. Financial authorities of good standing assumed that the supply of money would be reduced both by the shutting down of the mines and by the large demands of the Government. Papers of some financial importance attributed every trifling drop in prices to the expectation of a decreased supply of money, and predicted much greater declines in prices in the immediate future; the shortage in the money supply had not yet been much felt, but they were confident that the pinch would come soon.

Nothing of the sort has occurred. The business of the world has gone on with little to indicate a change in the supply of money. The war has not used up or consumed any money at all. This seems like a truism, that ought not to require mention, but in the early stages of the war the needs of the British Government were repeatedly cited as a reason for supposing that the money market must presently be strained. What happened was that by the sale of securities and the exaction of taxes the British Government acquired large sums of money which it immediately disbursed, and these sums, passing through the hands of contractors, owners of steamships and the troops, speedily found their way back into the banks and the money market again.

The year before the war the Transvaal produced nearly $80,000,000 of gold, and if the war had not interrupted the production of 1899 would probably have reached $100,000,000. It is reasonable to suppose that in the next two years the production would have much exceeded the last sum. Undoubtedly the interruption of mining had some effect, but it was rather negative than positive; the supply of money was not restricted, but it did not increase as rapidly as it had been increasing. The loss from the Transvaal was partly offset by increased production elsewhere. The world's production outside of the Transvaal was $53,000,000 greater in 1901 than in 1898. The total production in 1900 and 1901 was greater than that of any year previous to 1898, in spite of the fact that the Transvaal production fell to a trifling amount. In the past three years the State banks of European countries have increased their gold holdings $170,000,000. The only two which did not increase their gold holdings were that of Belgium, whose supply did not change, and that of Russia, whose stock decreased $120,000,000; but as this resulted from the redemption of paper money the probability is that a good deal of the gold that disappeared from the State bank remained in the country. The stock of gold in the United States increased over $220,000,000, making an increase of nearly $400,000,000 in the American and European visible supplies, in spite of the fact that the Transvaal production has been very small in the past 32 months.

The traffic of the world is very largely carried on by instruments of credit. A reduction in the supply of gold may have no effect upon traffic, beyond that of increasing the use of instruments of credit. In recent years the supply of gold has been so vast and has increased so rapidly that the additional supplies might have been reduced more than they have been with no visible effect upon the supply of credit.

Commercially the war has had a great effect. The export of German textiles was interrupted, and this was a leading cause of the depression in German manufactures. British money, and to some extent foreign money,

that would otherwise have been used industrially, has been withheld from such employment and invested in British Government securities. In three years before the war the British public debt was reduced $100,000,000, and that money had to seek investment. In the past three years there has been no such release of funds, but, on the contrary, $600,000,000 had been diverted from commercial to military uses, and $225,000,000 had been obtained by additional taxation and applied to military uses; the property has been destroyed; the money has not been, but it has been spent for things that have been destroyed, and the interest and repayment can be met only by taxation. War rate of expenditure will continue for at least this year. The war has retarded industrial investment, and destroyed something like a billion dollars' worth of property, but it has had only the slightest effect upon the supply of money, and the gold not extracted from the Transvaal in the past three years is perfectly safe and will be extracted in the future.

## End of the Illinois Anti-Trust Law.

The last vestige of the Illinois anti-trust law was recently declared unconstitutional by a local court. Suits involving a total of $10,000,000 had been instituted by the Attorney-General of the State to collect fines for violation of the law requiring affidavits from corporations that they are not a party to any pool, trust or combination. A section of the anti-trust statute of 1891 prescribed that such affidavits should be filed annually by corporations with the Secretary of State under penalty of a fine of $50 for each day of delay after a certain date. For years this law was practically a dead letter. Corporations were regularly notified by the Secretary of State that such an affidavit was expected, but if it was not forthcoming no proceedings were taken to punish the delinquents. About 1897 and 1898 the formation of a number of consolidations caused an awakening of the dormant apathy to trusts, and the State officials decided to make an attempt to enforce the law. In 1899 attorneys for the State began no less than 1200 suits in the city of Chicago alone to recover fines from corporations refusing or neglecting to make the prescribed affidavit. The Illinois Manufacturers' Association undertook the defense of their members who had been sued, but it was not until the past month that any of the cases came to trial. Meanwhile the United States Supreme Court had decided in other cases brought to test the Illinois anti-trust law that it was unconstitutional, because it discriminated between parties subject to its provisions. This ruling has just been held by the Illinois court to apply with equal force to the section of the law imposing fines on corporations for their failure to file affidavits as above set forth.

The principle seems to be clearly established by these decisions that legislation against pools, combinations or trusts must be general in its character to stand the test of constitutionality. The courts will not sustain attacks on corporations simply because they are corporations. The corporate form of conducting business operations, whether large or small, is not only strictly legal but has existed so long and is so thoroughly interwoven into our business fabric that the popular prejudice against it is unreasonable. It is the existence of this prejudice which is responsible for much of the anti-trust legislation which has been annulled by the courts. Individuals, partnerships and labor organizations are almost invariably exempted from the pains and penalties of anti-trust laws. They can enter into pools, combinations and agreements which may have a most serious effect in bringing about restraint of trade, and anti-trust laws have have no terror for them. This, however, will not be countenanced by the courts, and hereafter corporations must be considered by law-making bodies as entitled to equal rights with individuals, partnerships and labor organizations.

## CORRESPONDENCE.

### Changes in Total Carbon in Remelting Iron.

*To the Editor:* H. E. Field, in an excellent paper before the American Foundrymen's convention, Boston, affirms that I claim that carbon is always increased by remelting cast iron, and that Mr. Keep holds that carbon is always decreased. I wish to modify Mr. Field's understanding of my position. By referring to page 304, third to sixth edition of "Metallurgy of Cast Iron," the following may be seen: "Total carbon is, as a general thing, increased by remelting. The amount is chiefly dependent upon the percentage of fuel used and the length of time the iron is in the cupola. Little fuel and quick melting may at times cause a slight reduction of the carbon. In the case of excessive fuel, which will give hot iron and cause slow melting, carbon may be increased. It is also, to some degree, dependent upon the silicon and manganese present. The former retards while the latter promotes the increase of carbon."

This is practically a condensed statement of the same conclusions arrived at by Mr. Field, and shows that there is not the difference between his conclusions and mine that his statement would lead one to infer.

THOS. D. WEST.

SHARPSVILLE, PA., June 30, 1902.

**The Drawback on Porcelain Lined Tin Cans.**—WASHINGTON, D. C., July 1, 1902.—The Treasury Department, upon the application of the American Can Company, has prepared a series of regulations for the allowance of drawback of duty on the exportation of porcelain lined tin cans manufactured from imported porcelain parts and from tin plate either imported or domestic. These regulations are as follows: "On the exportation of porcelain lined tin cans, the interior consisting of imported porcelain parts, the exterior being made of tin plate, either imported or domestic, and the whole, when filled, being hermetically sealed, a drawback will be allowed equal in amount to the duty paid on the imported material used, less the legal deduction of 1 per cent. The preliminary entry must show the marks and numbers of the shipping packages and the number and size of cans contained in each package. The drawback entry must show the total number of cans of each size exported. The said entry must further show, in addition to the usual averments, that the exported cans were made of material and in the manner set forth in the manufacturer's sworn application. In liquidation the quantity of imported porcelain parts which may be taken as the basis for allowance of drawback may equal the number of cans exported corresponding with the various sizes as shown in the drawback entry after official verification of the same. When the exteriors are made of imported tin plate the quantity of such plate which may be taken as the basis for allowance of drawback may be determined under the provision for tin cans in Department circular dated August 1, 1896. (T. D. 17,355.)" W. L. C.

The Estey Wire Works Company of New York City have secured a site on Dean street, Brooklyn, where they will immediately commence the erection of a new plant. The building will be 50 x 100 feet, three stories, and will be equipped with the machinery from the present plant on Atlantic avenue, which they are compelled to vacate to make way for the improvements to the Long Island Railroad. They advise us that they will install some new machinery.

# The Proper Valuation of Pig Iron for Foundry Purposes

In the last issue of *The Iron Age* we presented the memorial submitted by Dr. Moldenke, secretary of the American Foundrymen's Association, for a better method of valuing pig iron for foundry purposes. We published also comments made by a number of leading makers and merchants of pig iron, to which we are now in a position to add the following:

H. L. Williams of Hickman, Williams & Co. of Chicago writes: The starting point suggested would be well enough, but for the fact that the product of the same furnace is subject to variation from month to month and day to day. It is questionable if one or a dozen tests would be sufficient to determine a standard for a given brand, more than the general knowledge had to-day of the quality of the various foundry irons.

The larger portion of castings are made from two or more irons. Test bars from a mixture of several irons may vary entirely from test of the component parts.

The supply of foundry iron ores from all sources will be needed sooner or later, and we believe that the foundry that has or will determine the complete analysis of their perfect casting and will buy irons of analyses to total these results, making due allowance for increase of sulphur from fuel and loss of silicon in the pig iron remelting, will have the advantage of the most economical mixtures and the least trouble from imperfect castings.

A very prominent firm in Chicago writes: We have read Dr. Moldenke's memorial to the American Foundrymen's Association, suggesting certain methods for fixing values of foundry pig iron. We fail to see any advantage to be gained by such a change to either the furnaceman or the foundryman. On the other hand, many disadvantages present themselves.

The past ten years has witnessed a very general improvement in the use of pig iron, growing out of the intelligent study on the part of the foundryman of the various constituents required in pig iron to produce desired results. His experience during this period has been valuable to him and has taught him what irons to purchase and how to use them. Such a foundryman (and we are glad to say that he is now found in most of the leading shops of the country) does not need the assistance which this method contemplates. It can, in our judgment, be of benefit only to those who do not possess the same skill and are willing to lean on others to the extent of making them responsible for foundry practice. This is obviously impossible. Any method which opens a door to controversy on the value of pig iron after it is sold and delivered under given specifications cannot fail to be unsatisfactory to both the seller and buyer.

### Furnaces Cannot Make a Uniform Product.

Henry H. Adams, New York, president of the Colonial Iron Company, says:

As a manufacturer of pig iron and with 36 years' experience in the pig iron business I would suggest as follows:

I doubt if any centralized plan or proposition as embodied in a Standardizing Bureau wherein and from which determinations could be made as to the technical value of any brand of iron now produced in this or any other country could be accurately determined or fixed, because the unavoidable variation in the character of the iron ore from any mine is so great, because the working of the blast furnace in consequence of the variation in the moisture of the atmosphere changes so from day to day, and because the variation of the fuel required to meet the requirements of the cases is also so great that it is simply impossible to obtain under any circumstances now known a chemically uniform pig iron. We suggest as an example our furnace practice or method, which is as follows: Every cast of our blast furnace is chemically analyzed and placed upon our shipping yard, the piles being duly marked and numbered. Our record book shows that each cast number contains the full analysis as to silicon, phosphorus, sulphur, manganese, &c. To the manufacturer of fine castings, requiring great fluidity and long life in the ladle, we ship a certain percentage of silicon, and never less than 0.50 per cent. of phosphorus to any foundryman requiring an absolutely neutral and nonshrinkable iron. Should this combination of chemical constituents suit his singular and peculiar requirements for his castings, this formula is marked upon his order, and upon receipt of any further orders these chemical requirements are complied with and the iron is selected from the stock on hand in our yard.

No blast furnace to-day can produce a uniform product unvarying from a fixed standard. The chemical constituents embodied in the product of any day in the practice of the blast furnace industry are never the same, from the fact that the moisture of the atmosphere pumped into the smelting zone of a blast furnace is ever varying from day to day, and this, together with the fact of the variation in every vein of iron ore, in every cubic foot mined, is sufficient to make it impossible to produce an absolutely uniform product of pig iron. Therefore, I cannot see wherein it is possible to arrive at any absolutely regular and reliable standard which might be attempted by the Standardizing Bureau. The only possible result from such a plan could be to determine the general characteristics of certain brands of pig iron, which could be determined by the use of certain mixtures of ore, all of which would technically vary from day to day as to chemical constituents and combinations, and the proposed test bars and other physical tests would necesarily vary in accordance with the condition of the furnace at the time the metal for test was produced. In this connection I would say at the moment that the only reliable method that could be adopted at this stage of blast furnace practice would be to have each cast chemically analyzed, placed upon the yard marked, and shipped to the consumer requiring in his pig iron this special chemical combination. A great many of the blast furnaces manufacturing pig iron for foundry purposes have adopted this method, and, with the required chemical constituents of the pig iron for the foundryman's purposes always placed and embodied in his order and strictly conformed to by the manufacturer of the pig iron, there would be a uniformity obtained for the consumer's purposes that could not be controlled by any other methods in blast furnace practice, so far as my experience goes.

### The Plan Neither Fair Nor Practicable.

A large Southern manufacturer of pig iron says:

I agree with Dr. Moldenke that it is as much to the interest of the furnace making foundry iron as it is to the foundry using it to see that the present field for iron castings is maintained, if not extended, and I realize that, in order to accomplish this and successfully compete with the makers of steel castings in certain lines of work, the quality of the iron castings must be maintained at the highest possible level; at the same time I do not think that his plan of putting the entire burden upon the furnace either a fair one or a practicable one. His idea seems to be that the "proof of the pudding is in the eating," and that, no matter what the anlysis of the pig iron is before remelting, the iron should be judged solely and entirely by the test bar resulting. This, in my opinion, is as unjust as it would be to condemn a piece of cloth because the tailor in making it up cut his cloth badly and made a poor fit. It is pretty generally conceded that a good casting depends largely not only on the pig iron used, but also upon the cupola practice, proper mixing of different brands of iron, the character of the coke used for melting, the manner of pouring the iron into molds, the kind of sand used, &c., and that pig iron that gives entire satisfaction in one shop may be condemned and found unsuited for use in another shop, while both shops may have an equal reputation of turning out first-class work. The sellers of pig iron have had the experience of iron being rejected by one concern as unsuited for their work, and afterward used satisfactorily by another making the same class of castings. Take the steel trade, and we find that the users of plates, shapes, rails, &c., have certain specifications for the finished material, and the makers of steel comply with

these specifications, but the makers of steel do not ask that the furnaces supply them with iron and guarantee that the resulting steel will suit the steel plate customers. They buy iron of certain anlysis and assume the responsibility themselves of making it into the proper kind of steel. This, I think, is as it should be in the foundry trade, as it places the responsibility for good finished material where it properly belongs. I am quite sure that the Foundrymen's Association will find it extremely difficult to purchase iron based on the analysis and physical test secured from a test bar after the iron has been remelted.

**Standardizing of Pig Iron Not Practicable.**

An Eastern pig iron firm of high standing say:

We do not consider that the standardizing is practicable. The even operation of blast furnaces is so uncertain and the character of iron produced from cast to cast is so different that for a long time the running of the molten metal direct from the blast furnace to the Besemer converter was impracticable until the mixer now in use by the different steel companies was brought into use. It would, therefore, seem to us that, unless the product of the furnace was to be put into a mixer, it would be impossible to standardize the iron. It consequently appears to us that it is within the province of the foundry to buy irons and mix them in accordance with known requirements as the only way to overcome the irregularities of the blast furnaces.

**Too Many Conditions to Control.**

A Southern pig iron company whose brand has long been on the market say:

In our judgment the scheme is not practicable. There are too many conditions not within the power of any one to control that would enter into a scheme of this character. Nearly every foundryman makes up his mixture from different grades of iron from different furnaces. These brands of iron each have a different composition, and it seems to us that the results desired to be obtained must be secured through practical experiment and experience. Nearly every make of iron is of different content, and especially is this true in the South. Take, for example, our No. 2 iron, which contains, say, 2.5 per cent. silicon, with 1.3 per cent. phosphorus, and, say, 0.03 per cent. sulphur. Supposing this iron is to be mixed with another iron, all these ingredients would have to be considered. Our iron can be used with another of less silicon, if it has the same phosphorus, but if the mixing iron was of less phosphorus the silicon would need be fairly high.

You can understand how many variations can be worked up out of these different anlyses. Nearly every large foundryman has iron from 20 to 30 Southern furnaces, each differing somewhat from the other. If our iron was taken out of his mixture and a lower phosphorus iron substituted he would be compelled to consider the question of silicon and possibly sulphur, and in the effort to standardize the foundryman will get as many standards as there are leaves on the trees, providing always that he attempts to make the standard within reasonably close limits.

Let us suppose that the foundryman has been using any one or more grades of our iron, mixing with different grades of other makes, and he is out of our iron and some other make, and must make up a new mixture, how is he going about it under the standardizing method? The silicon content of iron he has may be one thing and may be another. He is compelled to work with the material he has, and I hardly think he would pay any attention to test bars that happen to be at the foundry furnished by the Standardizing Bureau. The most successful foundrymen understand very well the properties of the different irons going into their mixtures, and usually try to keep up a stock of all these different makes.

**The Suggestion Fundamentally Wrong.**

A Northern manufacturer of long and varied experience in operating blast furnaces says:

I quite agree with Dr. Moldenke that some method for the proper valuation of pig iron should be devised, but his suggestion would not, in my opinion, accomplish the purpose aimed at. It is, indeed, fundamentally wrong, in that it assumes that the character of a pig iron is correctly reflected in the character of the casting made from it, which is far from being true. A poor casting can be made from the best pig iron, and a casting fairly good can be made from an inferior iron. Dr. Moldenke seems to have overlooked the important fact that the quality of a casting depends not alone upon the quality of the pig iron from which it is made, but largely, also, upon the quality of the fuel used in making it. Still further, an unsatisfactory casting can be made with both iron and fuel of the best quality by unskillful treatment in the cupola. The temperature of the iron, the fuel used, the adjustment of the tuyeres and other things all have a decided bearing on the quality of the casting.

Pig iron should be valued according to its chemical analysis, but if, in addition, a physical test is required, let it be made upon the pig iron direct. If Dr. Moldenke's suggestions were adopted the furnaceman would be responsible not only for the management of his blast furnace, but for the management, as well, of all the cupolas in which his iron is melted. Would not that be asking rather too much?

## Trade Publications.

**Plain Grinder.**—The Wilmarth & Morman Company of Grand Rapids, Mich., have designed a plain grinder which differs in some respects from the conventional form of this class of machines and appears to be the better for this departure. The wheels are far apart, 24 inches, giving plenty of elbow room for a man at each wheel; simple, quickly adjustable and removable shields over the wheels help to keep grit from striking the eyes. The bearings, unusually long, reach close to the pulley and wheel flanges, insuring ample support for the spindle and absence of vibration when running. The wrench fits all nuts and screws on the machine and is fastened with a chain to keep it where it belongs. The column is of a design that allows close approach to the wheels. The water pot swings into the column when not needed and leaves the front of the machine entirely clear. The countershafts furnished with these machines are also of improved form, self contained to facilitate putting up.

**Portable Forges.**—The portable forge No. A, built by David Cumming of 783 West Kinzie street, Chicago, is intnded for use on steamships, in mines, boiler shops, bridge works, and so on. It combines light weight with strength. It can be readily taken apart—into six pieces—and quickly reassembled. The heaviest piece weighs but 28 pounds, and the largest, the basin, is 18 inches in diameter and 5 inches deep. These advantages make it possible to take the forge into confined places, and as it weighs complete only 90 pounds it can be carried on mule back.

**Driller.**—A circular from the Standard Motor Company of Kokomo, Ind., describes their driller for all kinds of metal. The friction of the drill is reduced to a minimum by ball bearings. It is made for both square and round shank bits.

**Steel Rails.**—The Victorian Railway Department is calling for tenders, returnable September 1, for 15,850 tons steel rails and 1505 tons steel fish plates. The rails are 8500 tons of 80 pounds and 7350 tons of 100 pounds. Particulars obtainable from the agent general's office in London.

The American Galvanizing Works, 1243 Fillmore street, Chicago, have issued a pamphlet, tabulating the various sizes, lengths and quality of galvanized angles, equal legs; angles unequal legs; round back 60-degree angles, galvanized flat bars, galvanized bands and scrolls, galvanized round bars and channels, used especially in the manufacture of wind mills and tank towers.

Ira C. Hubbell has been appointed assistant vice-president and general manager of the Leighton & Howard Steel Company, St. Louis, Mo.

# The Eight-Hour Law.

## A Final Hearing.

WASHINGTON, D. C., July 1, 1902.—The legislative contest over the eight-hour bill closed for the first session of the Fifty-seventh Congress on the 30th ult., in a final hearing before the Senate Committee on Education and Labor, which was devoted to taking the testimony of representatives of the National Association of Manufacturers, including President David M. Barry and George H. Barbour, chairman of the Committee on Legislation of the National Association, and William A. Saunders of the Ingersoll-Sargent Drill Company. These gentlemen all opposed the bill vigorously, and Mr. Barbour made an elaborate statement, in which he gave the reasons which actuated the association in taking its stand against the pending bill.

### George H. Barbour.

President Barry described the general purposes of the association, the character of the manufacturers belonging to it and then introduced Mr. Barbour who, after stating that in addition to being chairman of the Legislative Committee of the association, he was vice-president and general manager of the Michigan Stove Company of Detroit, Mich., said in part:

"This bill affects for the time being only Government employees and manufacturers having contracts with the Government, but, in my opinion, it establishes a dangerous precedent. It is liable to affect State legislation. If the Government could make a law which would reach all over the United States so that it would become a universal law it would be very different. In my opinion, this bill in its present form would injure instead of protect the laboring classes. A laboring man earning on the basis of 25 cents per hour working ten hours per day makes $2.50 per day. If his working days were reduced to the eight-hour limit it would bring his wages down to $2. Mr. Gompers claims that the eight-hour day has brought with it a higher rate of wages than the long hours. That has not been my experience. In my own city of Detroit the street cleaning forces, for example, work eight hours and get $1.50 a day. Those same men could to-day earn $1.75 and $2 in the car shops if they would work ten hours. It is not reasonable to expect that ten hours' wages will be paid for eight hours' work.

"But a more serious condition would follow if a manufacturer to-day in any particular line working on a ten-hour basis has a demand for his entire product. You can readily see that with eight hours' labor in place of ten, his output would be reduced 20 per cent., and there would be but one of two things to do; either to increase his manufacturing capacity sufficiently to meet this 20 per cent. reduction or lose this amount of business. In our own stove works, we have endeavored to work one department nine hours instead of ten, but this has operated disadvantageously in many ways, and last week we had to invest over $6000 to get up the work that was produced by the polishers, they being unable to get it done during the same number of hours, though working piece work.

"Another phase of this situation should not be lost sight of. If the State of Michigan, for example, were to pass a bill similar to this one, making eight hours a day's work, and the State of Indiana should not pass a similar bill, competing manufacturers in the same line of business in Indiana would have a decided advantage over those in Michigan which would result very disastrously to the latter. I believe both the manufacturer and the laborer are interested in this important bill, and I am one who feels very kindly toward labor when its position is just and right, but I cannot consider this bill as being along those lines. It is a measure that is sure to affect every manufacturer of this country sooner or later, and when you affect the manufacturer injuriously labor will certainly be affected. It seems to me, therefore, it is surely your duty to prevent legislation that will affect adversely the interests of both labor and capital."

Chairman McComas asked the witness at this point whether it would not be practicable in manufacturing concerns employing labor for 10 or 12 hours per day to put on two shifts of eight hours each and thereby actually increase the product, and also whether in view of the protective tariff enjoyed by manufacturers in the United States they were not in position to make an experiment of an eight-hour day, as against the longer work day in other countries. Replying to the first question Mr. Barbour stated that it would be impossible to secure two shifts of men in most lines of manufacturing. In his own business he had attempted to run two shifts for several months, but could not get the men to do the work, labor of all classes being employed to its utmost capacity. With regard to the question of competing on an eight-hour basis with the manufacturers of foreign countries working longer hours, Mr. Barbour said it would be very difficult to get a foothold in foreign countries without meeting the competition. The National Association, he said, had made a strong point of agitating the importance of the export trade to keep plants going all the year round. Continuing, he said:

"If eight hours will not do the work let us have nine or whatever is necessary, and do not let us disturb the conditions that are to-day most favorable to both classes. What we want in this country is 12 months' business."

Taking up the subject of the effect of the bill upon manufacturers in general, Mr. Barbour said:

"While this measure is aimed at the Government contractors, it will have a moral effect, if not a direct, practical effect on all manufacturers. A manufacturer who takes a contract to build a certain machine and who subcontracts his supplies, such as plates, bolts, &c., must buy those goods of manufacturers who are working eight hours, or the machine would be rejected under this law. And suppose no manufacturer working on an eight-hour basis could be found to furnish certain things needed in the construction of the machine what would the Government do? It would certainly have to go without the machine. Now it is such things as these which should have very careful consideration. Unless this law could be made universal—and that does not seem to be possible—I confess I do not want to be placed at the disadvantage of 20 per cent. in competing with my neighbor."

With regard to the general question of bringing about an eight-hour day, Mr. Barbour said that it could not be done by legislation, either national or State, but that it must result from a general movement on the part of manufacturers. In no case, however, should there be a hard and fast rule which would prevent laborers from working more than eight hours if they desired to do so for extra pay. Such latitude was absolutely necessary in order to bridge over emergencies and save heavy losses which a rigidly enforced rule, whether for eight, nine or ten hours, would cause.

### William A. Saunders.

Mr. Saunders, vice-president of the Ingersoll-Sargeant Drill Company, made a brief statement, which he prefaced by saying that as a member of the National Manufacturers' Association, he was opposed to the bill for the reason that it curtailed the product of American manufacturing establishments and in addition discriminated as between customers and to the disadvantage of the Federal Government. Continuing, he said:

"I am vice-president of a manufacturing company who take contracts from the United States Government. The most recent contract that I recall was one for a large air compressing plant for the Mare Island Navy Yard in California. The machinery was built according to special requirements, and because of the strict specifications we did not care to bid on them, but did so because the Government is one of our best customers and we felt it our duty to do so. Now, these machines were built in several departments of our works, and it would have been wholly impracticable to build them according to the terms of this law. The castings were made in our foundry, where we employ 600 or 800 men, and it would be impossible for the best foundry foreman to charge his cupolas with just the amount of iron that he would need to fill all his flasks within the eight-hour limit. Under this bill if the eight hours have passed and he still has several tons of metal in his cupola, he must leave it there and let it solidify, after which he must blast out the cupola.

"In addition to this, in making up an air compressor or in building machinery for the Government, we use certain parts that are produced elsewhere; under this bill, not only our concern but all those from whom we purchased parts would be compelled to produce them on an eight-hour basis. It seems to me the measure is not practicable, and I think it ought not to be passed by Congress."

Upon the conclusion of the hearing the chairman announced that the meetings of the committee would be resumed in December, and that representatives of the National Association of Manufacturers would be heard in advance of other witnesses. In conclusion he said that it was the purpose of the committee to report the bill to the Senate before the holiday recess, and that if necessary the committee would meet oftener than once a week to hear arguments on the measure. W. L. C.

## The Machinists' Agreement at Pittsburgh.

At a conference held in Pittsburgh on Monday, June 30, between committees representing the International Association of Machinists and the principal machine builders of Pittsburgh and vicinity, a wage agreement was reached for the year commencing July 1, 1902, and which was a compromise of the demands made by the men some time ago. The original scale as asked by the machinists, and which was refused by the engine builders of Pittsburgh, is as follows:

**Agreement.**

Between.....
And the INTERNATIONAL ASSOCIATION OF MACHINISTS, PITTSBURGH DISTRICT No. 6.

Section 1. That on and after.....1902, the firm of..... agree to employ only members of the International Association of Machinists in good standing on machinists' work. Provided, that if at any time the union is unable to furnish sufficient men, nonunion men may be employed temporarily.

Sec. 2. Machinists shall be recognized as per constitution of the International Association of Machinists, and shall be either a competent general hand, floor hand, vise hand or machine hand. It is understood that the question of competency is to be determined by the employers, since they are responsible for the work turned out by their workmen; they shall, therefore, have full discretion to designate the men they consider competent to perform the work and to determine the conditions under which it shall be prosecuted. This paragraph does not in any way abridge or destroy the right of appeal from any apparent or alleged unjust decision rendered by an employer or his representative in conformity with the powers vested in him by this section.

Sec. 3. All overtime shall be paid for at the rate of one and a half (1½) time, with the exception of Saturday night, Sunday, Sunday night and all legal holidays, which shall be paid for at the rate of double time.

Sec. 4. The employment of apprentices shall be in accordance with the constitution of the International Association of Machinists.

Sec. 5. Nine hours shall constitute a day's work.

Sec. 6. This company agrees, in case of trouble arising between them and the machinists, to receive a committee of their machinists, or the business agent, in order to adjust said trouble.

Sec. 7. An increase of ten per cent. (10 per cent.) in the present rate of pay is hereby granted, to take effect on the signing of this agreement.

Sec. 8. This agreement shall be in effect and force until June 1, 1903.

Sec. 9. Thirty days' notice shall be given by one party to the other prior to June 1, 1903, for a renewal of this agreement or any desired change of the same.

The above demand was absolutely refused by the employers and for a time it was feared a serious strike would result. A number of conferences were held, but without result, until the one on Monday, June 30, when an agreement was reached and signed by committees of both sides, as follows:

**Agreement.**

THIS AGREEMENT, entered into at Pittsburgh, Pa., this 30th day of June, 1902, by and between a committee representing the machine builders of Pittsburgh and vicinity and a committee representing the International Association of Machinists of Pittsburgh and vicinity,

WITNESSETH:

First, That during the term of this agreement the general conditions now existing in the shops of the parties hereto shall remain unchanged, unless changed by a majority vote of the joint committee, except that double time shall be paid for Sundays, Fourth of July, Labor Day, Thanksgiving Day and Christmas.

Second, That any difficulties or disputes that may arise in the shops of the parties hereto shall, upon the request of either party, be taken up by the committee representing the parties hereto, each of which shall consist of five members. The decision by a majority vote of this Joint Committee of Arbitration shall be binding upon both parties. Pending such decision there shall be no cessation of work by strike or lockout at the instance of either party to the dispute.

Third, For one year from July 1, 1902, an advance of five per cent. shall be paid to each journeyman machinist now in the employ of the parties represented in this agreement.

Fourth, This agreement shall remain in force until July 1, 1903, and thereafter, unless either committee gives ninety (90) days' notice to the other that they wish to withdraw or amend this agreement.

(Signed.)

JOS. FAWELL,
AUGUST SNYDER,
GEORGE MESTA,
JOHN JACKSON,
ISAAC W. FRANK,
Committee representing the principal machine builders of Pittsburgh and vicinity.

HERBERT HORNE,
STUART SIMPSON,
ANTHONY E. SNYDER,
HUMPHREY B. CAMPBELL,
WM. A. SHAW,
Committee representing the International Association of Machinists of Pittsburgh and vicinity.

## The Birmingham Miners' Strike.

*(By Telegraph.)*

BIRMINGHAM, ALA., July 1, 1902.—All members of the order of United Mine Workers in this district have quit work, with the exception of those employed by the Woodward Iron Company. This company have signed a contract for 30 days with the members of the association employed by them, the terms of which neither party to it will divulge. Six furnaces have been banked up to this time and preparations are being made to bank others as occasion may require. Mass meetings of miners are being held at the various camps to discuss the questions at issue, but it will be several days before any decided action will occur, as a conference must first be asked and agreed to before which the opposing interests will carry their contentions for discussion and settlement. In Walker County a large element of the miners are nonunion miners, and that county is a field for missionary work that both sides will cultivate with spirit. Acceptance of the miners' demands means, from the standpoint of the furnaces, an advance of $1 in the price of pig iron, discouraging confidence, lessening consumption, and finally causing a slump and another demoralization of the iron trade. To prevent these evils the furnace interests are making their stand. There is prevalent both the hope and belief that suspension of work will be only temporary, as the miners' demands are too extreme to win acceptance. The scale on which the final agreement will be based must be on or near the basis that prevailed for the year just ended.

**Large Engine Contracts.**—The Mesta Machine Company, Lewis Block, Pittsburgh, and works at West Homestead, Pa., have received a contract for three disconnected compound vertical type blowing engines for the new blast furnace being built by the Cleveland Furnace Company, at Cleveland, Ohio. The high pressure cylinders will be 44 x 60, low pressure 84 x 60 and air cylinders 84 x 60 inches. They have also received an order for another steeple type high pressure blowing engine for the Lake Superior Power Company, at Sault Ste. Marie, making four engines in all furnished to this concern by the Mesta Machine Company. The same concern have recently shipped a 45-inch blooming mill with tables, manipulator and auxiliaries, together with a 46 x 60 inch gear reversing engine, to the new open hearth steel plant of the Labelle Steel Company, at Steubenville, Ohio. The Mesta Machine Company are building a 50 x 60 inch horizontal piston valve reversing engine for the new steel plant of the Alan Wood Company at Conshohocken, Pa. The bed plate of this engine is made in two parts and weighs 125 tons.

**A Large Order for Blowing Engines.**—CHICAGO, ILL., July 1, 1902.—*(By Telegraph.)*—The Allis-Chalmers Company of Milwaukee have received an order for eight blowing engines from the American Steel & Wire Company. The contract price for each engine is given at $45,000, an aggregate of $360,000. The engines are to be distributed to the various plants of the American Steel & Wire Company throughout the East.

# MANUFACTURING.

### Iron and Steel.

Dispatches from Waukesha, Wis., announce that the Waukesha Sheet Steel Company contemplate the building of an open hearth steel plant, as well as the adding of a corrugating department. The difficulty of obtaining steel recently is said to have induced the company to enter into the manufacture of steel. The scarcity of steel heretofore has compelled the works to suspend at various times. It is understood, however, that some of the mills have now resumed.

The Norton Iron Works, Ashland, Ky., contemplate the erection of a 60-foot addition to their plant to give needed room for the nail mill.

The National Rolling Mill Company, Hartford City, Ind., are building two additional furnaces in the puddle mill, one a cinder bottom and the other a sand bottom. They expect to put the gas producer in before winter and have also arranged to install a new electric plant.

There is a movement on foot for the establishment of a large steel plant at Cincinnati, Ohio, the capitalization of which is to be about $1,000,000. E. P. Wilson, secretary of the Cincinnati Board of Trade, is conducting the negotiations.

The rebuilding of the rolling mills of the Hager Steel & Iron Company, at Madison, Ill., which were burnt several months ago, is announced. The Moran Bolt & Nut Company of St. Louis and Luther McGilery of Madison are said to have purchased the site, paying $50,000 for the property. About 500 men will be given employment when the mill is completed.

The Forter-Miller Engineering Company, engineers and contractors, Westinghouse Building, Pittsburgh, have received a contract from the Susquehanna Iron & Steel Company, Columbia, Pa., for a furnace and producer plant in connection with the new tube mill to be erected at Columbia. The producers will be of the Forter water sealed type.

The Pressed Steel Car Company of Pittsburgh have bought about 7 acres of land located adjacent to their works in lower Allegheny. The ground will be used at some future time for extensions to that plant. The price paid for the property is said to have been $90,000.

The National Tube Company of Pittsburgh recently filled an order through a jobber for a considerable amount of pipe for shipment to the Cape Nome gold fields. The quantity involved is said to have been 1800 tons.

The Fort Pitt Iron & Steel Company and Zug & Co., Limited, of Pittsburgh, have signed the Amalgamated Association scale.

The Riter-Conley Mfg. Company of Pittsburgh have been awarded contracts for the erection of Carrie Furnace No. 5 by the Carnegie Steel Company, at Rankin Station. The new furnace will be 90 feet high, with a 20-foot bosh, and will have a daily output of 600 tons. The contract also includes an extension of the ore bins and handling equipment in use at the other four furnaces.

The American Iron & Fuel Company of Denver, Col., have been organized with a capital of $1,000,000. Richard Price, Oliver S. Moles, Ellsworth Bethel, Frederick W. Hellett and Silsbee D. Lieurence are the incorporators.

Word has been received that the Detroit Iron & Steel Company, who are building a $1,000,000 blast furnace on Zug Island, have placed a number of contracts recently, among them being the following: Excavation, piling and concrete, D. J. Kennedy & Son, Detroit; stove and furnace, the Riter-Conley Company, Pittsburgh; structural iron work, bins, trestles, &c., Russel Wheel & Foundry Company, Detroit; boilers, Aultman-Taylor Machinery Company, Mansfield, Ohio. The Detroit Southern Railroad is building the switches at the new plant. The blowing engines will be furnished by the William Tod Company of Youngstown, Ohio. They will be two high pressure and an intermediate low pressure, which can be coupled to either of the others. The cylinders are 84 inches in diameter, with 5-foot stroke.

The Fort Pitt Bridge Company of Pittsburgh, with works at Canonsburg, Pa., have secured a contract for the buildings for the new works of the Youngstown Mfg. Company, at Youngstown, Ohio. The main building will be 55 x 340 feet, with a leanto of 40 x 160 feet.

The United Engineering & Foundry Company of Pittsburgh have secured a contract for the erection of a 12-inch mill at Seattle, Washington. The mill will be built at Lloyd-Booth Department of the United Engineering & Foundry Company, at Youngstown.

The Apollo Works of the American Sheet Steel Company, at Apollo, Pa., are being dismantled, and the mills and other equipment are being removed to Vandergrift, Pa. The Apollo plant is one of the oldest owned by the American Sheet Steel Company, and contained 12 heating and 9 annealing furnaces, 1 muck and bar train, 6 hot and 2 cold mills, and 2 20-gross ton acid open hearth steel furnaces. The product of the plant was 18,000 net tons of black sheets, running triple turn. It is the intention of the American Sheet Steel Company to centralize the manufacture of sheets at Vandergrift as much as possible.

The Champion Rivet Company of Cleveland, Ohio, are going ahead with their project of erecting a new works at Parnassus, Pa., about 20 miles from Pittsburgh. There will be a main building 70 x 350 feet, machine shop, power house, pickling house and storage rooms. The capacity will be about 75 tons of open hearth steel and refined iron rivets per day. The Eastern trade will be supplied from the Parnassus works and the Western trade from the present plant at Cleveland, Ohio. The concern have opened an office in the Arrott Building, Pittsburgh.

The Delaware River Steel Company are being organized for the building of a large steel plant on the Delaware River. It is understood that the product will be used by the Delaware River Ship & Engine Building Company, recently organized to take over the Roach shipyard at Chester, Pa.

Combination furnaces recently installed in No. 3 sheet mill of the Aetna Standard Works of the American Sheet Steel Company, at Bridgeport, Ohio, have proven so successful that others are being built for sheet mills Nos. 18 and 19. It is probable all the furnaces in that plant will be changed to the combination type, as they are said to effect great saving in fuel.

The Sharon Steel Hoop Company have under erection at Sharon, Pa., an open hearth steel plant to contain four 25-ton basic open hearth furnaces, a 23-inch and 12-inch mill. The new works will be ready for operation about the first of the year.

The Ellwood City Works of the American Tin Plate Company, at Ellwood City, Pa., are being dismantled and the mills are being removed to Monessen, Pa. The Ellwood City works contain 6 double sheet and pair furnaces, 1 annealing furnace, 6 hot and 6 cold mills. The product of the plant was black plates for tinning and cold rolled steel sheets, the output being 12,000 gross tons annually, triple turn. The plant also turned out 5400 boxes weekly of tin and terns plate, running double turn.

The Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, have signed the Amalgamated Association scale. The scale signed covers the muck, bar, sheet and skelp mills.

The Sharon Boiler Works, Sharon, Pa., recently sent a large force of men to the plant of the Colorado Fuel & Iron Company, at Pueblo, Col., where the firm are doing a large amount of iron work for the new blast furnaces being erected by the Colorado Company.

The Continental Iron Company, at Wheatland, Pa., have signed the Amalgamated scale.

The Riter-Conley Mfg. Company of Pittsburgh have started up a portion of their new works at Leetsdale, Pa. It is expected that by January 1 of next year the entire plant will be in operation. In addition to building structural work, it is the intention of the Riter-Conley Mfg. Company to build steel barges, and the plant will use a very large tonnage of steel.

### General Machinery.

The James H. Perkins Mfg. Company, Seattle, Wash., machinery, founders and machinists' supplies, will shortly be incorporated. The company will erect a manufacturing plant, 60 x 120 feet, with power house attached, all equipment for which has been contracted for. Within the next 60 days they will be in the market for a large amount of goods for their store. James H. Perkins is president and Abe G. Perkins secretary and treasurer.

The Lackawanna Iron & Steel Company, Buffalo, N. Y., have purchased from the Westinghouse Electric & Mfg. Company ten induction motors of 75 horse-power each to operate the coke oven blowers, four induction motors of 100 horse-power each for operating the gas cleaning plant, and induction motors for driving the machine shop. The Lackawanna Company have recently bought in all 151 type 6 Westinghouse induction motors of from ½ to 100 horse-power. The Westinghouse Electric & Mfg. Company have also closed with the Fayette Mfg. Company of Chester, Pa., for power equipment for their new plant. It will be a three-phase equipment, including an engine type alternator, exciter, switchboard and alternating current motors aggregating 290 horse-power.

W. H. Nicholson & Co., Wilkes-Barre, Pa., report a large increase in their coupling business during the past year. They have recently taken up the manufacture of the Wyoming eliminator, which is a combination steam separator and trap. This machine is specially designed to eliminate all the entrained moisture or condensation from steam lines. It will automatically discharge any quantity of water from the "drip of condensation" to a dash or flood. They also report a large business in their expanding lathe mandrels.

The recently organized Eureka Powder Company, 508-510 Ohio street, Terre Haute, Ind., are in the market for a soda grinder.

The Ewart Mfg. Company, with general offices at Chicago, manufacturers of link belting, are erecting a plant at Indianapolis in which they will locate shortly. Heretofore they have occupied a leased building from the National Malleable Castings Company. The latter company are desirous of extending their facilities by adding the portion of the building which the Ewart

Company occupied. The business of the Ewart Company has outgrown the present location, however, and more space being necessary they are erecting buildings to meet their increased requirements. The main building will be 180 x 242 feet, with an L 80 x 80 feet and three stories high. The building which they erected a little over a year ago is 64 x 160 feet and two stories high, with a wing about the center 32 x 42 feet.

The York Mfg. Company, York, Pa., have secured a contract from the Metropolitan Hygeia Ice Company of Cambridge, Mass., for complete equipment for a 100-ton ice plant, including compound condensing machines, water tube boilers, &c. Other recent orders include machinery for 15-ton plant for the Flat Top Ice & Cold Storage Company of North Fork, W. Va.; 25-ton plant for the Coffeyville Ice Works of Coffeyville, Kan.; 6-ton refrigerating and 2-ton ice plant for Max Levinson of Newport News, Va.; 6-ton ice plant for Hanson, Toerner & Fortius of Berwick, La.; 10-ton refrigerating and 2-ton ice plant for Cape Cruz Construction Company of Cape Cruz, La.

In order to be more centrally located and to be in a better position to look after their enlarging trade, E. A. Bienenstok & Co. of St. Louis, Mo., have opened an office at 713 Locust street. They will still retain their old show rooms at 717 North Second street.

The Dayton Pattern & Model Works, W. S. Hawker, proprietor, of Dayton, Ohio, are in the market for shafting, hangers and belting and some new machinery, including a dynamo for lighting purposes. They also require an outfit for producing gas from petroleum. The concern are erecting a new five-story brick building, 40 x 100 feet, to accommodate their rapidly increasing business in patterns and models and pattern supplies of every description.

Henry A. Hitner's Sons, Philadelphia, Pa., dealers in new and second-hand I-beams, channels, tanks, machinery, &c., have purchased a site on Commerce street, upon which they will erect a 1½-story shop, 84 x 375 feet; two-story storage shed, 90 x 154 feet, included in which is a boiler and engine house; metal house, 56 x 62 feet, one story, and office building, 37 x 56 feet.

The Baylon Machine & Tool Company, 18-20 Morris street, Jersey City, N. J., have incorporated under the same name.

The Curving & Drilling Machine Company, Salt Lake City, Utah, recently incorporated, will put on the market a curving and drilling machine which for the present they will have built by contract. B. F. Grant is president.

The Chicago Pneumatic Tool Company, through their Pittsburgh office, have secured a contract to furnish the William B. Pollock Company, Youngstown, Ohio, with a 1600-foot cross compound steam and compound air compressor of the Franklin type. The company have started shipment on their order of 200 pneumatic tools to the Standard Steel Car Company of Butler, Pa. The order comprises the entire pneumatic equipment for the company's plant at Butler, Pa., and consists of 150 Boyer long stroke riveting hammers and 50 Boyer pneumatic hammers.

The Grant Tool Company, Franklin, Pa., have just received an order from the Allis-Chalmers Company, for the new plant at West Allis, for a 24-foot pit lathe which will weigh 80,000 pounds.

The St. Marys Machine Works of St. Marys, Ohio, are preparing to erect an addition to their plant. It will be a substantial brick structure 50 x 125 feet and two stories high.

The Diamond Drill & Machine Company of Birdsboro, Pa., whose foundry was recently destroyed by fire, state their ability to fill all orders with little delay, and are entering new orders for immediate filling. They are rapidly starting a foundry in the buildings just completed for their steel casting plant, and will make gray iron castings in these until a new building can be erected for their iron foundry.

George W. Heartley of Toledo, Ohio, manufacturer of eaves trough hangers, power and hand punching machinery, tools and dies, has purchased a factory building 33 x 99 feet, four floors, and will also erect, adjoining same, a factory 66 x 99 feet and two stories high. It is his intention to manufacture special machinery for the production of metal wheels of every description; also punches, dies and die forgings. His facilities for producing eaves trough hangers will also be greatly increased.

### Boilers, Engines, &c.

The Walsh & Weidner Boiler Company, Chattanooga, Tenn., will double the capacity of their plant by the extension of 236 feet to their shops and the erection of a large boiler warehouse. They are installing a lot of modern boiler machinery and expect to equip the traveling cranes with electricity. An electric light plant, a 100 to 125 horse-power Corliss engine, and probably some hydraulic riveting machines will also be installed.

The Shenango and New Castle Works of the American Tin Plate Company, at New Castle, Pa., have been closed down for about one week, to make necessary repairs and take inventory.

The Beilfuss Motor Company of Lansing, Mich., have been incorporated with a capital of $4500 to manufacture gas and vapor engines. The following are the officers of the company: Edward N. Reitz, president; Richard A. F. Beilfuss, vice-president and superintendent, and John F. Betz, secretary and treasurer. A patent was granted to Mr. Beilfuss on an automatic governor or speed regulator, which is claimed to be entirely new. The firm have been making a specialty of manufacturing stationary and marine engines, but in a short time they will also manufacture engines for vehicles. Many of the company's motors are at present in successful operation.

C. H. Bradley, Jr., & Co. have secured a contract from the Sharon Steel Company, Sharon, Pa., for 4000 horse-power Geary water tube boilers, to be installed at once, and 1200 additional horse-power to be installed during the next six months. The contract was taken for the boilers erected complete, the foundations furnished by the Sharon Steel Company. C. H. Bradley, Jr., & Co. to furnish all brick work and stacks. This makes the fifth order for Geary water tube boilers received by the above-named concern from the Sharon Steel Company, or a total of 17,700 horse-power.

The large water softening plant being installed by the Pittsburg Filter Mfg. Company, Pittsburgh, Pa., for the Tennessee Coal, Iron & Railway Company, Ensley, Ala., has been completed and will be put in operation in a few days, as soon as the connections to the furnaces and steel works can be completed. This will be the largest single water softening plant in the world. The same company are building for the Colorado Fuel & Iron Company, Pueblo, Col., a plant of 1,000,000 gallons capacity; Sharon Water Company, Sharon, Pa., 2,000,000 gallons capacity; Columbia Water Company, Columbia, Pa., 2,000,000 gallons capacity. These contracts will be completed in about 60 days.

The We-Fu-Go and Scaife water softening and purifying systems are now manufactured exclusively by Wm. B. Scaife & Sons Company, Pittsburgh, Pa. The We-Fu-Go system is a cold and intermittent system and was formerly manufactured by the We-Fu-Go Company of Cincinnati, but which were recently absorbed by Wm. B. Scaife & Sons Company. The Scaife system is a hot, continuous system. The following contracts for these systems have recently been secured by Wm. B. Scaife & Sons Company: Hecla Portland Cement & Coal Company, North Bay, Mich., 1500 horse-power; West Branch, Mich., 500 horse-power; Isaac Harter Company, Fostoria, Ohio, 1000 horse-power; A. A. Simonds & Sons, Dayton, Ohio, 200 horse-power; American Sheet Steel Company, at New Philadelphia, Ohio, 1300 horse-power; National Mining Company, Pittsburgh, 1000 horse-power; Antrim Iron Company, Mancelona, Mich., 1500 horse-power; Ashtabula Worsted Mills, Ashtabula, Ohio, 96,000 gallons per day; W. D. Boyce Paper Mill Company, Marseilles, Ill., 1,250,000 gallons per day.

A 50 horse-power return tubular boiler and one 10 and one 6 horse-power cylinder steam engine are required by the Eureka Powder Company, 508-510 Ohio street, Terre Haute, Ind., recently organized, who will erect a mill for the manufacture of high explosives and blasting powder. They expect to be in operation by September.

The William Tod Company, Youngstown, Ohio, have received an order from the Colorado Fuel & Iron Company, Pueblo, Col., for two steeple type cross compound blowing engines. With previous orders these will make one dozen engines of the same type furnished by this concern to the Colorado Fuel & Iron Company.

E. W. Cummings, consulting engineer, 70 Dexter Horton Building, Seattle, Wash., who is preparing plans for water works for Caldwell, Idaho, will receive bids about July 8 for two 20 horse-power gasoline engines and two triplex pumps of 260 gallons per minute capacity, each capable of working against a head of 250 feet.

The International Boiler Works Company, Stroudsburg, Pa., have recently built a special vertical boiler for the Pacific Coast and are now building a 300 horse-power tubular boiler to be used on a dredge in New York Bay. They furnish periodically receivers to the Ingersoll, Rand and McKiernan drill companies, and also the Chicago Pneumatic Tool Company. The business of the company is having a healthy and steady increase.

L. O. Koven & Brother, 50 Cliff street, New York, manufacturers of high pressure galvanized range boilers, are enlarging their plant in Jersey City, which now has a frontage of 250 feet on Mountain Road and 525 feet on Paterson Plank Road. The improvements consist of an addition of 10,400 square feet to the boiler plant, equipped with new tools for making large size hot water tanks and heavy plate iron work, and a warehouse 40 x 80 feet, for the storage of black and galvanized riveted pipe. The firm recently completed a new three-story brick warehouse and removed the blacksmith shop to a larger site, equipping it for doing heavy forge work. They also contemplate the building of a furnace house and flanging department, in which will be installed modern appliances for doing this class of work more rapidly.

### Fires.

The main power plant of the Eureka Lighting Company, Eureka, Cal., was recently destroyed by fire, entailing a loss of about $30,000. It is understood that the plant will be rebuilt at once.

The Criterion Knitting Company's plant at Lowell, Mass., was recently destroyed by fire. The loss is estimated at about $50,000.

The mill of the Peerless Plush Company at Paterson, N. J., was destroyed by fire July 1. The loss is about $100,000.

The foundry department of the Scaife Foundry & Machine

Company, Limited, at Pittsburgh, was completely destroyed by fire last week, involving a loss of fully $50,000. The plant will be rebuilt as rapidly as possible.

**Foundries.**

The Catawissa Car & Foundry Company of Catawissa, Pa., recently incorporated, have their plant well filled with work and have recently installed new equipment to increase their production. The company make a specialty of mine, dump, construction and plantation cars, and have made considerable progress in the export field. W. H. Rhawn, the president of the company, is one of the leading lawyers of Central Pennsylvania and is connected with other manufacturing enterprises. The practical part of the business is under the direction of H. P. Yetter, a civil engineer, and skilled in the car and foundry business. J. K. Sharpless, treasurer, is one of the directors of the First National Bank of Catawissa, and one of the leading business men of the town. C. E. Randall, secretary, is the editor of the Catawissa *News Item*.

The Youngstown Bronze Company, recently organized at Youngstown, Ohio, will manufacture bronze, brass and small gray iron castings. Officers have been elected as follows: Grant S. Jones, president; J. W. Long, vice-president and superintendent, and W. H. McMillin, secretary and treasurer.

The new plant of the Fort Pitt Malleable Iron Company, at McKee's Rocks, Pittsburgh, has been completed and put in operation. The concern are manufacturers of malleable and gray iron castings.

The Central City Brass Mfg. Company, Syracuse, N. Y., will enlarge the capacity of their foundry.

The Syracuse Malleable Iron Works, Syracuse, N. Y., will build a new foundry, about 100 x 200 feet, to be operated in connection with their present foundry on South Geddes street.

In consequence of the coal famine the Andrew Terry Company, Terryville, Conn., have been obliged to adopt fuel oil to operate their annealing department, and are now fitting up several of their furnaces with an expensive system of oil burners, which it is expected will be in operation within a week. This is not a new departure with this company, as they were the pioneer malleable iron producers to successfully use oil for annealing. The company adopted the Aerated Fuel Company system 12 years ago, but discontinued it in 1895 when the entire plant was burned and the apparatus for burning oil was ruined. Since that time hard coal has been used exclusively.

The William E. Pratt Mfg. Company, Chicago, are erecting buildings along the Rock Island road at Joliet, the foundry building being 80 x 360 feet, with an entire frontage of about 800 feet. They expect to employ about 150 men to make high grade malleable castings, and will be in operation by July 15. James W. Beaman, formerly of the Chicago Malleable Castings Company and the Chisholm & Moore Mfg. Company, is superintendent.

The business of Nelson L. Rundlo, Williamsport, Pa., manufacturer of iron and brass castings, has been taken over by the Rundlo-Bubb Foundry Company, who were recently organized. The members of the concern are Nelson L. Rundlo and Henry A. Bubb, formerly secretary and treasurer of the Buffalo Charcoal Iron Company of Buffalo, N. Y.

The National Malleable Castings Company of Cleveland, have taken out a permit to erect an office building to cost $18,000. The building will adjoin their plant and will be of brick and stone, three stories high.

The Zanesville Malleable Iron Works of Zanesville, Ohio, have commenced work on their new building, which will be 270 x 280 feet, facing on Cleveland street and Moxahala avenue, in that city. Recent reference as to their plans was made in this paper.

**Hardware.**

New England Awl & Needle Company, West Medway, Mass., report an increased demand for their product, which they attribute to the care and attention given to the manufacture of the goods.

Aermotor Company, Chicago, Ill., report business better than ever before. They find themselves hard at work to keep within sight of orders, although they are running their plant until 9 o'clock at night.

Wm. Roettger & Co., Huntingburg, Ind., have incorporated under the style of the Huntingburg Wagon Works, with a capital of $30,000. They have sold their present building, and when they vacate it in September will move into new shops now in course of erection.

The Union Furnace & Mfg. Company, Altoona, Pa., are manufacturers of pressed steel round and square registers, steel and malleable garden rakes, garden and corn hoes, curry combs, mason and garden trowels, saw sets, coffee mills, &c. They make a specialty of welded or plain jack shovels, their daily output being over 100 dozen shovels.

Franklin Mfg. Company, Rochester, N. Y., are putting in new machinery and increasing their facilities to keep up with orders for their Franklin crayons.

The Auld & Conger Company, Cleveland, Ohio, report that the demand for slate this season has been greater than ever before in their history. They have, however, been able to take care of orders in a satisfactory manner on account of new machinery and other facilities installed at the quarries and larger forces of workmen.

Coleman Hardware Company, Morris, Ill., manufacturers of builders' and cabinet hardware, are taxed to their fullest capacity by orders received from the trade.

Geo. Ertel Company, manufacturers of incubators and brooders, baling presses, &c., Quincy, Ill., report the largest season's business in their history. They are contemplating adding another large building to their plant.

The Scranton Bolt & Nut Company, Scranton, Pa., have completed their brick extension planned during the past winter, all the machinery being set and in operation. The enlargement increases their capacity one-third. All departments are running full and trade is very satisfactory. Their business now extends to the Pacific Slope, that with railroads being heavy. The export trade also holds well up.

Avery Mfg. Company, Peoria, Ill., are now erecting a warehouse at Kansas City, Mo., which will be one of the heaviest constructed buildings in the West. This building is planned for the purpose of carrying heavy farming machinery, and the floors are designed to sustain the weight of the heaviest traction engines. The freight elevator, which will have a capacity of 20 tons, will have a clear platform space of 12 x 26 feet. In addition to the freight elevator there will also be a passenger elevator, running to the seventh floor, where the offices of the company will be located. The building will be seven stories high and 96 x 60 feet in dimensions.

Turner, Day & Woolworth Handle Company, Louisville, Ky., whose plant was visited by fire a short time since, are now replacing the buildings destroyed with fire proof brick structures of larger capacity. They have already placed orders for the necessary machinery. Their engines and boilers were not seriously damaged.

It is stated that the Donovan Wire & Iron Works Company of Toledo, Ohio, have purchased 7 acres of desirable property in that city and are having plans prepared for the erection of a plant for the production of wire goods, small iron specialties and structural iron work.

**Miscellaneous.**

The American Shipbuilding Company, Cleveland, Ohio, have taken the contract for one of the largest and most powerful steam car ferryboats ever constructed. It will be built in Cleveland for the Traverse City, Leelanau & Manistique Railway. The boat will cost about $400,000.

The Hockensmith Wheel & Mine Car Company, recently chartered, will build a plant at Irwin, Pa., for the manufacture of patent mine cars and mine equipment. It is said there is a very large demand for mine cars and equipment, and the concern have already received a number of inquiries for their products.

C. D. Fisher, representing the Board of Trade of Wapakoneta, Ohio, has closed a contract with a Chicago concern to establish their plant in Wapakoneta. They manufacture acetylene gas generators, stoves, pans and other products, and in consideration of a bonus of $12,000 and 15 acres of land they have agreed to establish a plant employing 50 men the first year and 100 men by the third year. It is announced that work on the plant will start at once.

The plant and business of the Consumers' Carbon Company of Lancaster, Ohio, have been bought by C. S. Britton, A. M. Britton, S. R. Britton, B. L. Britton and S. H. Holding, all of Cleveland. They will build additions and otherwise increase the capacity of the plant. In addition to electric light carbons heretofore produced they will manufacture carbon specialties of all kinds.

The W. S. Tyler Wire Company, Cleveland, Ohio, will erect a large storage building adjoining their plant. The building will be wholly of metal.

The National Carbon Company have announced that they will rebuild the plant which was destroyed by fire some time ago at Sandusky, Ohio. The capacity will be increased considerably.

The Star Aluminum Company of Doylestown, Ohio, have increased their capital stock from $10,000 to $15,000 and will make a number of improvements to their plant.

The plumbing department of the Stambaugh-Thompson Company, at Youngstown, Ohio, has been awarded a contract for all the plumbing work for a large apartment building now being erected in Youngstown.

We are advised by Peter L. Kimberly of Sharon, Pa., that the report that he, with others, would form a large coke company and build coke ovens in Kentucky, is incorrect. It is a fact that Mr. Kimberly and his associates have bought a large coal acreage in Kentucky and have organized a company under the name of the Northern Coal & Coke Company, but as to what will be done with the property has not yet been fully determined.

The Ohio Automobile Company of Warren, Ohio, manufacturers of gasoline vehicles, have met with such pronounced success in introducing their vehicles that they find it necessary to increase their facilities. They will erect a brick addition 200 x 60 feet and two stories high. A new foundry will probably be erected later. The improvements will double their capacity.

# The Iron and Metal Trades.

So far as the immediate supply of Pig Iron is concerned, the situation is becoming more and more serious, and is affecting more particularly the Foundry trade. The Schuylkill and Lehigh valleys are crippled by the Anthracite Coal strike, and are not getting their supply of Mountain Cokes as fast as they ought to. In Virginia a number of stacks are idle, owing to the troubles in the Virginia and West Virginia Coal fields, which are also causing cessation of work with the blast furnaces of the Ohio Valley. Some of the Tennessee furnaces are in trouble, too, and now comes the struggle over the renewal of the scale with the miners in the Birmingham district, which, according to our dispatches from there, has already caused the banking of six blast furnaces in the district. The Steel trade is not affected as to supply of raw material, except so far as it tells on the make of Basic Pig and Low Phosphorus Iron.

This, of course, is a splendid opportunity for the importers of foreign Foundry Pig Iron, and we hear of considerable sales of Scotch, English and German Pig Iron and some quite liberal offerings as to quantity. The very large amount of foreign material which has been contracted for has, however, crowded the freight carriers and it is understood that the regular lines are filled up to September, which, of course, interferes with that prompt delivery which is the essence of the transactions.

Chicago continues to report heavy sales of Pig Iron for the first half of 1903, one consumer being credited with having taken 30,000 tons. However, there is a growing disposition among furnace interests to discourage booking for 1903 until the situation is more clearly defined. The Southern railroads have warned the producers that while they will protect them on freight rates up to January 1, they will be unable to do so after that date. The result is that buyers of 1903 Pig Iron must assume the risk of an advance in freights.

In the Steel trade sales of foreign material continue to be made in moderate lots, including both Billets and Steel Bars.

From Chicago further sales of Steel Rails for 1903 delivery are reported, and it is figured out that thus far there have been placed in that territory about 435,000 tons. The Eastern mills have not booked nearly as much, but have taken some good orders. The Pennsylvania Company have not yet ordered their requirements beyond one parcel of about 20,000 tons booked some time since. It is generally admitted that considerable tonnage must be carried over into next year because the mills will be unable to roll it. Estimates of the quantity are obviously subject to many contingencies. The guesses run from 300,000 to 400,000 tons.

The policy pursued by both railroads and manufacturers, as to Rails, of booking early, at prices now prevailing for 1903 deliveries, is followed also in the case of bridge material, and it is understood that a large tonnage has already been secured. The business in Structural Shapes goes on at a heavy rate and there is a very large volume in sight. Deliveries continue exceedingly unsatisfactory and imported material is snapped up at prices far above the official level.

The closing of large contracts for ships on the lakes will bring into the market some additional large orders for Plates and Shapes. We have not heard that they have been already placed.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type. Declines in Italics.**

At date, one month and one year previous.

| | July 2, 1902. | June 25, 1902. | June 4, 1902. | July 3, 1901. |
|---|---|---|---|---|
| **PIG IRON:** | | | | |
| Foundry Pig No. 2, Standard, Philadelphia | **$22.75** | 22.00 | 19.75 | 15.00 |
| Foundry Pig No. 2, Southern, Cincinnati | **20.75** | 21.25 | 19.25 | 13.00 |
| Foundry Pig No. 2, Local Chicago | .... | 21.50 | 21.50 | 15.00 |
| Bessemer Pig, Pittsburgh | 21.50 | 21.50 | 21.50 | 16.00 |
| Gray Forge, Pittsburgh | **21.00** | 20.50 | 19.75 | 13.75 |
| Lake Superior Charcoal, Chicago | 24.00 | 24.00 | 23.00 | 17.00 |
| **BILLETS, RAILS, ETC.:** | | | | |
| Steel Billets, Pittsburgh | 32.00 | 32.50 | 32.25 | 24.00 |
| Steel Billets, Philadelphia | 29.50 | 29.50 | .... | 26.75 |
| Steel Billets, Chicago | .... | .... | .... | .... |
| Wire Rods, Pittsburgh | *36.00* | 27.00 | 27.00 | 39.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| Spikes, Tidewater | 2.00 | 2.00 | 2.00 | 1.80 |
| Splice Bars, Tidewater | 1.90 | 1.90 | 1.75 | 1.45 |
| **OLD MATERIAL:** | | | | |
| O. Steel Rails, Chicago | 18.50 | 18.50 | 19.00 | 13.00 |
| O. Steel Rails, Philadelphia | 21.00 | 21.00 | 21.00 | 14.50 |
| O. Iron Rails, Chicago | 24.00 | 24.00 | 24.00 | 18.50 |
| O. Iron Rails, Philadelphia | **25.00** | 24.50 | 24.50 | 19.00 |
| O. Car Wheels, Chicago | **21.00** | 21.00 | 20.50 | 16.50 |
| O. Car Wheels, Philadelphia | **20.50** | 20.00 | 19.50 | 17.50 |
| Heavy Steel Scrap, Chicago | 19.00 | 20.00 | 19.00 | 13.00 |
| **FINISHED IRON AND STEEL:** | | | | |
| Refined Iron Bars, Philadelphia | 1.95 | 1.95 | 2.05 | 1.55 |
| Common Iron Bars, Chicago | 1.75 | 1.80 | 1.75 | 1.55 |
| Common Iron Bars, Pittsburgh | 1.80 | 1.80 | 1.80 | 1.40 |
| Steel Bars, Tidewater | 1.90 | 1.90 | 1.90 | 1.60 |
| Steel Bars, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.40 |
| Tank Plates, Tidewater | 2.00 | 2.00 | 2.00 | 1.75 |
| Tank Plates, Pittsburgh | 1.75 | 1.75 | 1.60 | 1.60 |
| Beams, Tidewater | **2.25** | 2.10 | 2.00 | 1.75 |
| Beams, Pittsburgh | *1.60 | *1.60 | *1.60 | 1.60 |
| Angles, Tidewater | **2.25** | 2.00 | 2.00 | 1.75 |
| Angles, Pittsburgh | *1.60 | *1.60 | 1.60 | 1.60 |
| Skelp, Grooved Iron, Pittsburgh | *2.15* | 2.15 | 2.25 | 1.82½ |
| Skelp, Sheared Iron, Pittsburgh | *2.25* | 2.25 | 2.35 | 1.90 |
| Sheets No. 27, Pittsburgh | 2.90 | 2.90 | 2.95 | 2.90 |
| Barb Wire, f.o.b. Pittsburgh | 2.90 | 2.90 | 2.90 | 2.90 |
| Wire Nails, f.o.b. Pittsburgh | 2.05 | 2.05 | 2.05 | 2.30 |
| Cut Nails, Mill | 2.05 | 2.05 | 2.05 | 2.00 |
| **METALS:** | | | | |
| Copper, New York | *12.12½* | 12.00 | 12.40 | 17.00 |
| Spelter, St. Louis | **4.85** | 4.70 | 4.55 | 3.82½ |
| Lead, New York | 4.10 | 4.10 | 4.10 | 4.37½ |
| Lead, St. Louis | 3.97½ | 3.97½ | 4.00 | 4.35 |
| Tin, New York | *28.00* | 28.25 | 29.65 | 28.50 |
| Antimony, Hallett, New York | **8.37½** | 8.37½ | 8.00 | 8.75 |
| Nickel, New York | 50.00 | 50.00 | 50.00 | 60.00 |
| Tin Plate, Domestic, Bessemer, 100 lbs., New York | 4.19 | 4.19 | 4.19 | 4.19 |

*Official Quotations.

## Chicago

FISHER BUILDING, July 2, 1902.—(*By Telegraph.*)

The last week of June has witnessed further liberal buying of Heavy Rails by Western railroads for 1903 delivery. Sales aggregated about 75,000 tons, making a total of about 450,000 tons since the inauguration of the buying movement for next year began about the first of the month. Another important feature of the market has been the renewed buying of Iron Bars, there having been about 12,000 tons in the aggregate placed by large consumers last week at 1.75c. to 1.80c., there being a disposition to have orders placed before the closing of the mills, many of which ceased operations for repairs last Saturday: they will probably resume about July 15. The placing of orders for about 40,000 tons of Pig Iron for delivery for the first six months of 1903 is also significant. The sales were mainly by Northern furnaces, but there have also been some transactions in Southern Iron. The scarcity of Iron for immediate delivery and the stringent Coke market continue to be conspicuous features of the situation. The inquiry for Structural Material for 1903 delivery continues on a liberal scale, and several contracts of moment have been closed during the week, aggregating from 5000 to 6000 tons, in addition to the consummation of the negotiations on the details of Steel for the First National Bank Building, which requires about 12,000 tons. There are more negotiations pending for foreign Billets for delivery during the latter part of this year, but the demand for foreign Rails seems to have dropped off completely. In this connection it is significant to note that the harbor of Antwerp is said to be congested with Steel for American shipments, and vessels which were under penalty to load in June have reported that it will be impossible for them to reach the dock even for several weeks

after the contract time. Of the 12,000 tons of foreign Rails previously reported about half the quantity is still waiting shipment at the European port. It is this condition of affairs as much if not more than freight rates which is holding in check foreign business.

**Pig Iron.**—Sales aggregating about 40,000 tons have been made of Northern Iron on the basis of $21 for No. 2 Foundry, Chicago, for delivery during the first six months of next year. One company alone are said to have taken orders for 30,000 tons. There has also been a considerable tonnage placed for deliveries beginning in November of this year and extending into the first four months of next year. But while the volume of business has been mainly in Northern Iron there have been further transactions in Southern makes on the basis of $17 for No. 2, Birmingham. The market for Southern Iron seems to be more settled, there being a tacit understanding apparently among Southern furnaces, but the report is current that a meeting is to be held to formally adopt $17 as the basis of next year's delivery—that is, for the first half of the year. Thus far prices have ranged all the way from $16.50 to $18, transactions being actually booked at these prices. These fluctuations have crystallized into a steady market on the basis above quoted—that is, $17 for No. 2. Agricultural implement men, stove founders, machinery manufacturers and merchant founders have been among the buyers. There have been larger offerings of Forge Iron, but little, if any, outlet has been found in this market for such grades, mills consuming more largely of Scrap than ever before. The general character of the market as far as spot and this year's delivery is concerned has changed but little. By some hook or crook dealers have been able to secure occasional lots ranging from carloads to 50 tons for quick shipment. This has been especially true of Southern Iron, which has sold mainly at $23.15 for No. 1, and $22.65 for No. 2, delivery Chicago, but there have continued to be occasional transactions where excessive prices have been obtained. They have been, fortunately, however, the exception rather than the rule. More furnaces are being banked in the Ohio Valley, and not a few Southern furnaces have found it necessary to bank for short periods recently because of the lack of ample Coke supply, and this trouble seems likely to be aggravated rather than otherwise for a few weeks at least. Reports are also received that sickness is making havoc among the furnacemen, among some of the old stacks, one report being that 75 men were temporarily laid off on this account. It is understood that while Southern furnaces are able to protect freight rates on contracts for six months from the present time they will be unable to do so after the first of next year, and consequently the business being taken for delivery during the first six months of 1903 is being taken at the risk of an advance in freight rates. This, however, seems to make little difference with purchasers, who are covering contracts rather than anticipating new business.

**Bars.**—There has been more activity in the market for Bar Iron, a larger tonnage having been booked for the past week than for a month or more, yet the aggregate has not been heavy, being only about 12,000 tons, in lots of 200 to 2000 tons each, on the basis of 1.75c. to 1.80c., the higher prices prevailing, and the week closes with a more confident tone, a number of the mills having shut down for repairs last Saturday, and will probably resume about July 15. The jobbing demand has also improved, and the market has ruled firm. The demand for Soft Steel Bars has been fair with moderate sales in lots of 100 to 1200 tons, but no large specifications have been offered, and business has been without special significance. A firm tone continues to prevail, especially for Soft Steel Bars, which sell at 1.75c. to 1.90c. Hoops are steady at 2.15c. to 2.25c., and Angles at 2.25c., base, mill shipment. There has been little, if any, falling off in the jobbing trade, and the market has remained firm for Soft Steel Bars at 2.25c.; Angles, 2.50c., and Hoops at 2.50c., base, from store.

**Structural Material.**—The market has continued unusually active for this time of the year, although the tonnage has not been especially heavy, aggregating probably 5000 to 6000 tons, mainly for delivery during the early part of next year. The First National Bank Building contract, which involves the use of about 12,000 tons, was consummated during the week, but the sale had been apparently completed some time since, and was so reported in the East. There is still a moderate demand for foreign Steel, but business is held in check by the difficulty of making shipments, especially from Antwerp. For domestic Steel mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

**Plates.**—The overcrowded condition of the mills preserves the strong tone previously prevailing, with continued active demand, but mill prices are without change, being quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 2.25c.; Flange, 1.85c. to 2.35c; Marine, 1.95c. to 2.50c. The demand from store has been urgent, and inside prices have been again advanced. The following are the quotations from store: Tank Steel, ¼-inch and heavier, 2.30c. to 2.50c.; Tank Steel, No. 8, 2.45c. to 2.55c.; Flange, 2.40c. to 2.75c., all f.o.b. warehouse, Chicago.

**Sheets.**—With the exception of Heavy Sheets, which are firm, the market has been unsettled and prices somewhat irregular, Galvanized Sheets being especially weak. Mill shipments are as follows: No. 27 Black Sheets, 3.15c. to 3.25c., Chicago, and small lots from store, 3.45c. to 3.55c. Galvanized Sheets, net prices, mill shipment, are held on the basis of 4.45c. to 4.50c., and small lots from store at 4.70c. to 4.75c. for No. 27. Discounts are allowed, however, by certain mills.

**Cast Pipe.**—There has been considerable activity, a number of small orders being received by mail, almost continuously, but there has been an absence of any large contracts, although one or two of moment are pending. Prices have been without further change. Cast Iron Water Pipe is quoted by manufacturers as follows: 4-inch, $34.75; 6-inch, $33; 8-inch and upward, $32; Gas Pipe, $1 per ton higher than Water, f.o.b. Chicago.

**Merchant Pipe.**—There has been a moderate movement during the week, but the market has been without new features and has remained firm. Carloads are quoted as follows, random lengths: Black, ⅛ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ⅛ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

**Boiler Tubes.**—Few new contracts have been taken by mills, and the market has remained firm in tone. Prices for mill shipment are as follows:

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ inches | 42½ | 39 |
| 1¾ to 2½ inches | 55½ | 38 |
| 2¾ to 3 inches | 61 | 48 |
| 6 inches and larger | 55½ | 38 |

There has been a fair demand from store, which has been met at previously quoted prices, which are as follows:

| | | |
|---|---|---|
| 1 to 1½ inches | 35 | 35 |
| 1¾ to 2½ inches | 47½ | 32½ |
| 2¾ to 3 inches | 55 | 42½ |
| 6 inches and larger | 47½ | .. |

**Merchant Steel.**—There has been an active demand and a steady market for Agricultural Steel, and some contracts of moment have been placed. Tool Steel is meeting a fair demand without essential change in general conditions, but in some instances specials are being sold under 12c., but this is the exception rather than the rule. The jobbing demand has continued quite active. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.65c. to 2.75c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 7c. for mill shipments; specials, 12c. upward.

**Rails and Track Supplies.**—Two or three more of the Western railroads have placed orders in whole or in part for their requirements of Heavy Sections for 1903, the tonnage placed during the week aggregating about 75,000 tons. This makes about 435,000 tons which have been placed in the West during the past six weeks for delivery during 1903. Sales, of course, have been on the basis of $28 for Heavy Sections at the mill. The current tonnage of Light Sections has been readily disposed of at prices ranging from $35 to $40 per ton, according to weight and time of delivery. Few, if any, foreign Rails are being disposed of now. In all, about 12,000 tons have been purchased, little over half of which have been sold by the importers. Partial shipment was made in May and the balance was to have been shipped during June, but it is reported that the harbor at Antwerp is blocked with Steel for American shipment, and it will be impossible for the vessels, which are under penalty, to even reach the dock for several weeks. The demand for all kinds of Track Supplies has continued active, and a strong tone has continued to prevail. Fastenings are quoted in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.45c.; Square Nuts, 2.95c. to 3.10c.

**Billets.**—There has been less demand and a more ample supply of domestic Billets, and the market is less firm, but prices are barely sustained, small amounts of Open Hearth Billets being sold at $34 to $38, with especially desirable analysis as high as $40, according to buyer and time of delivery. There are some transactions of 5000 to 10,000 tons of foreign Billets for delivery during the last quarter of the year pending. Early shipments are being interfered with by the crowded condition of the European ports from which Steel is shipped, especially Antwerp. This probably has more to do with the present lull than the high freight rates asked.

**Old Material.**—There has been little change in the market for Scrap. The closing down of a number of mills has reduced the number of buyers in the market, but the offerings are light and prices are generally well sustained. There have been moderate sales of Heavy Relaying Rails at $32.50

to $33 for prompt delivery. The following are the approximate quotations per gross ton:

| | |
|---|---|
| Old Iron Rails | $24.00 to $25.00 |
| Old Steel Rails, mixed lengths | 18.50 to 19.50 |
| Old Steel Rails, long lengths | 23.50 to 24.50 |
| Heavy Relaying Rails | 32.00 to 33.00 |
| Old Car Wheels | 21.00 to 22.00 |
| Heavy Melting Steel Scrap | 19.00 to 21.00 |
| Mixed Steel | 15.50 to 16.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $22.00 to $23.00 |
| Iron Car Axles | 25.00 to 26.00 |
| Steel Car Axles | 22.00 to 23.00 |
| No. 1 Railroad Wrought | 21.00 to 22.00 |
| No. 2 Railroad Wrought | 18.00 to 19.00 |
| Shafting | 18.50 to 19.00 |
| No. 1 Dealers' Forge | 16.00 to 16.50 |
| No. 1 Busheling and Wrought Pipe | 14.00 to 15.00 |
| Iron Axle Turnings | 14.00 to 15.00 |
| Soft Steel Axle Turnings | 13.50 to 14.00 |
| Machine Shop Turnings | 13.50 to 14.00 |
| Cast Borings | 9.00 to 9.25 |
| Mixed Borings, &c | 9.50 to 10.25 |
| No. 1 Boilers, cut | 13.00 to 13.50 |
| Heavy Cast Scrap | 14.50 to 15.00 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 16.25 to 16.75 |
| Agricultural Malleable | 14.50 to 15.00 |

**Metals.**—The market for Copper has been heavy, with only a moderate degree of activity, and prices for carload lots have declined about ½c., the market closing at 12⅛c. In a jobbing way sales are made at 12½c. to 12¾c. Pig Lead has remained firm at 4.05c. for Desilverized in 50-ton lots and 4.07½c. in carload lots. Manufacturers of Sheet Zinc have advanced prices ½c. to 6½c., while in lots of 600 lbs. 6.65c. is obtained. The demand for Old Metals has been moderate, with Copper and Brass easy, but Zinc has been advanced ⅛c. Prices are unchanged, as follows: Heavy Cut Copper, 11¼c.; Red Brass, 11¼c.; Copper Bottoms, 10c.; Lead Pipe, 3.80c.; Zinc, 3½c.

**Coke.**—Light offerings have preserved the strong tone of the Coke market, and while there has been a fair demand it has not been especially urgent at Chicago, but some foundries buying in this territory are anxious for supplies, and have ordered agents to ship regardless of cost. Quotations are without essential change. Connellsville 72-hour Foundry Coke is difficult to obtain under $5.75, and has sold up to $6. Virginia and West Virginia has sold at $5.50 to $6. Chicago.

## Philadelphia.

FORREST BUILDING, July 1, 1902.

The first half of the year closes under remarkable conditions as regards the Iron and Steel trades. If the volume of business has not been the largest on record, it is because of interruptions which might have been measurably avoided, but with all the drawbacks it is quite likely that the past six months will show a larger consumption of Iron and Steel than during any similar period in the entire history of the country. The most serious problem at the present time, however, is in regard to the supply of material. Pig Iron and fuel are almost unobtainable, and from the present outlook there is not the slightest prospect of early improvement, although, of course, after so many weeks of struggle for control the end must be getting nearer every day. The suspension of work during the next week or two, more or less, may ease things up a little, but under the most hopeful conditions the supply of fuel and of Pig Iron is likely to cause a good deal of trouble before normal conditions can be reached. When this will be it is impossible to say, but the best opinions are that lower prices for Pig Iron are not within sight at the present time; and from the fact that large producers are quoting full prices for the first half of next year, and leading consumers are taking it, the feeling is evidently not pessimistic as regards prices. The extremely unseasonable weather, however, is beginning to attract attention; and unless there is a decided change within a week or ten days it will be very likely to give a serious check to business until it is clearly demonstrated what the effect will be on the various crops, wheat and corn especially. The general feeling in regard to the business situation is extremely hopeful, and while there is nothing upon which to base unfavorable opinions, it is certainly a good time to be conservative. A few days, or at most a few weeks, will show pretty clearly what to expect in the way of crops, and to a very great extent that will determine the degree of prosperity which may be expected for several months to come.

**Pig Iron.**—At no time within the past 25 years has it been as difficult to quote prices as it is to-day, and at no time has it been as difficult to guess what they will be two or three months hence as it is at the present time. Famine conditions are already in force, but if appearances are to be relied upon we shall be worse off later on. Fuel is getting scarcer and dearer every day, and now there are complaints of a car shortage, so that whichever way one looks prospects are not favorable for increased supplies, or for lower prices. It is hardly possible to quote very close figures, because a sale at a price one day may be superseded by another a little later at an entirely different figure, so that either of the sellers looking at the other's quotations may say that the price is not correct, while, as a matter of fact, both represent actual transactions. A case in point is that No. 2 X Foundry Iron sold a few days ago at $21.50 to $22 for next year's deliveries, while to-day $22.50 to $23 is as well as could be done, with some sales at a medium figure. What it will be next week is hard to say, although, in view of the intervening holidays, it is not expected that much business will be done at any price, but certainly not at lower prices. Gray Forge has sold at $20, delivered, but $20 at furnace is an inside figure to-day, and it is not likely to go below that for some time to come. Fuel is practically unobtainable, although pretty nearly double prices are paid for prompt shipments. To add to the complications, it is said that the railways are preparing for an advance in freights, so that the chances for lower costs for Pig Iron are simply out of sight. Foreign Iron is readily taken when it can be had with reasonable promptness, but there is still a strong indisposition to make forward contracts for Foundry grades. Low Phosphorus has again been sold for shipment to the West at a figure equivalent to $23, ex-ship, and considerable quantities of Middlesboro and of Scotch Irons are said to be afloat or ready for prompt shipment. A fair average of prices for deliveries in buyer's yards or nearby points would be about as follows for deliveries during the last quarter of the year, July, August and September deliveries being anywhere from $1 to $2 higher:

| | | |
|---|---|---|
| No. 1 X Foundry | | $23.50 to $24.50 |
| No. 2 X Foundry | | 22.75 to 23.50 |
| No. 2 Plain | | 22.25 to 22.50 |
| Standard Gray Forge | | 20.00 to 20.50 |
| Ordinary Gray Forge | | 19.00 to 19.50 |
| Basic | | 21.00 to 22.00 |
| Low Phosphorus | Prompt shipments | 23.00 to 23.25 |
| No. 3 Middlesboro | Prompt shipments | 21.75 to 22.25 |
| Scotch Irons | Prompt shipments | 22.75 to 23.50 |

**Billets.**—The market is a little dull, but as there is no Steel offering prices are nominally unchanged, say $33.50 to $34.50 for American, and $30 to $31 for foreign.

**Plates.**—There is plenty of business, and mills are in a position to pick and choose what they will take. The output of the mills is all bespoke for this and next month's deliveries, and unless by special arrangement September and later is about as soon as deliveries can be promised. Prices are firm as last quoted, viz.: Small lots, 2.10c. to 2.15c. Carload lots and upward: ¼-inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.; Charcoal Plates, C. H. No. 1, 2½c.; C. H. No. 1 Flange, 3c.; C. H. No. 1 Flange Fire Box, 3½c.

**Structural Material.**—The situation is unchanged, and deliveries still very hard to get. Foreign material is quoted, ex-ship or from store, at from 2.35c. to 2.75c. for Beams, Angles, Tees, &c., and all the arrivals are promptly taken. Mill shipments are said to command 2.75c. to 3c., f.o.b. sellers' mills, although theoretically they are about $20 per ton less, but nothing can be had for reasonably prompt shipments at less than the figures named.

**Bars.**—The position is very peculiar, but as regards prices it is not much different to what it was a week ago. The resumption of work at the local mills seems to have no influence, as they are fully employed on orders on which deliveries are past due, so that in the meanwhile they are under no necessity for new business. There is a good demand, however, and prospects for its continuance are quite satisfactory. Prices for Refined Bars 1.95c. to 2c. for carload lots and upward, and nominally 1.90c. to 2c. for Steel Bars, but they are hard to get at any price.

**Sheets.**—There is a fairly good demand, especially for long deliveries, but makers are not encouraging business of that kind at the prices buyers are willing to pay. Ordinarily prices are about as follows for best Sheets in carload lots, Common one to two lengths less: Nos. 10 and 12, 2.40c. to 2.60c.; No. 14, 2.70c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.30c.; Nos. 26, 27, 3.40c.; No. 28, 3.50c.

**Old Material.**—Prices are irregular, and the demand somewhat uncertain, but sales are made at prices within the following limits for deliveries in buyers' yards:

| | |
|---|---|
| Old Steel Rails | $21.00 to $21.50 |
| Heavy Steel Scrap | 21.00 to 21.50 |
| Low Phosphorus Scrap | 27.50 to 28.25 |
| Old Steel Axles | 27.50 to 28.50 |
| Old Iron Rails | 25.00 to 26.00 |
| Old Iron Axles | 29.00 to 30.00 |
| Old Car Wheels | 20.50 to 21.50 |
| Choice Scrap, R. R. No. 1 Wrought | 23.00 to 24.50 |
| Country Scrap | 18.75 to 19.75 |
| Machinery Cast | 17.75 to 18.75 |
| No. 2 Light Scrap (Forge) | 18.00 to 19.00 |
| No. 2 Light Scrap (Ordinary) | 15.50 to 16.50 |
| Wrought Turnings | 16.50 to 18.00 |
| Wrought Turnings, Choice Heavy | 18.50 to 19.00 |
| Cast Borings | 10.50 to 11.00 |

There will be no more open mills for the members of the Amalgamated Association of Iron, Steel and Tin Workers. July 1 was set by the Wheeling convention as the date on which lodges must have been reorganized in all open mills, or all members of the association must withdraw. The order may cause some vacancies in plants now open.

## Cleveland.

CLEVELAND, OHIO, June 30, 1902.

**Iron Ore.**—This week has seen a considerable fleet of Ore boats at the head of the lakes waiting for loads, and while they exceeded in number the actual requirements of the shippers, the latter class employed most of the vessels offered, saying nothing of the rate, hence paying the same as has been paid. At the lower lake docks the railroads are continuing their action of furnishing an increasing number of cars for the movement of the material and the shipment from the docks directly to the stock piles of the furnaces is still very heavy. The rates of carriage are still 75c. between Duluth and Ohio ports, 65c. from Marquette, and 55c. from Escanaba.

**Pig Iron.**—The buying of Foundry Pig Iron for delivery the first quarter of next year continues despite the advice frequently given the consumers by some of the sales agents to hold off for a while. The sales so far are not large, nor is the aggregate amount of material covered considerable, yet the tendency to buy ahead is gaining ground, as the inquiries to date indicate. On these advanced sales the furnaces, while advising caution of the consumers, exact from them nevertheless the same price as is being generally paid on the market now for what little material is to be had—namely, $22 in the Valleys. The supply of Foundry No. 2 is getting so short now as to almost preclude the possibility of even carload sales, which were made with some frequency a week ago. Some of the consumers, while desiring to cover their future needs now, are loath to do so on the present basis of prices, as they consider it necessary, present quotations being continued, to advance the price of the Finished Material to a basis commensurate with the price of Pig Iron. The members of the Bessemer Association are of the opinion that it may be some time, probably a month or two, before a sale is made for the second quarter of 1903. The indications all are that the association will demand a better price, while it is equally apparent that the consumers will demand a continuance of $16.50, the latter information growing conjecturally out of the persistence of the Steel Corporation in quoting official prices on material to be delivered next year, which is incompatible with a very great advance in the price of the raw material. Another consideration enters into the price of Bessemer established at this time. The Iron sold now for next year's delivery will be melted from Ores sold after the present contracts have expired. Any insistence therefore on high prices for Pig Iron now would be likely to cause a corresponding, if not a greater, rise in the prices of Ore for next year's delivery. The contention as to price has so much to do now with the continuation of the conservative policy that it is expected to be severe before the contracts have been closed. There is no immediate interest in Bessemer Pig Iron, the material being entirely off the market for the present. The same condition prevails in the Basic trade since there is no material for immediate selling and since the conditions are too uncertain for future sales to be made with any satisfaction either to consumers or producers.

**Finished Material.**—The Plate trade has become the center of interest through some of the transactions of the past week. The reports that come from different mills show a great variety of circumstances and conditions as to delivery. Most of the larger mills are entirely sold up for the present and for some time to come, having therefore nothing to offer. Some of the independent mills are offering material for October and November delivery, and from some of these mills sales have been made during the week at 1.80c., Pittsburgh. This, however, is not a criterion by any means by which the prices for the last quarter of this year are to be judged, since special conditions tempered the price. The general tendency is to charge at least 1.90c. for fourth quarter delivery. In some of the mills, which a month ago were announcing that they would take no more material for this year, there is a disposition to take orders for delivery in five or six weeks. These mills, of course, are taking advantage of the times, and are getting large premiums, demanding 2c. for their Plates. It is evident, however, that the Plate trade is easing up considerably. The boom is Structural Material, continues to be a most conspicuous feature of the market, and there is every evidence that material will be more difficult to get before it is any easier. The demand is steadily increasing, and the output has been a stable amount for several years past, and the mill men consider that the trade has outgrown the capacity of the mills engaged in the production of the material. With such conditions prevailing any immediate relief from the present stress of the market is hardly looked for. As it is, the buying for delivery during the second quarter of next year goes on steadily, and the mills have booked a great deal of tonnage for that period. The price holds at 1.70c. hTe demand for material for quick shipment is large, but there is none to be had. The sales of Rails have been quite active during the last few days, and the business for next year is very promising. The reports are that the aggregate sales are approaching the 1,000,000 tons mark, with the orders that will be carried forward. There is a very light demand for Sheets, and it begins to look now as if some of the mills would be scratching around for orders within a week or so. The production is quite large, and the sales have not been in proportion. The manifest need of more business was reflected on the local market this week by a contract closed with an outside mill at a price less than is being quoted by the trade generally. Almost all of the local dealers are still quoting the old list of prices, not having been forced to retire from them. These are 2.50c. for No. 10 as a basis on the gauges between Nos. 10 and 16 and 3.50c. to 3.60c. for No. 27 as a basis on the gauges between Nos. 17 and 28. The demand for 3-16 inch Plates has kept up steadily, and the market is strong, with prices ranging about 2c., although no sales of moment have been reported. There is a good demand for Bars at the old prices, large rounds, however, bringing a premium of from $2 to $4. The old quotations are 1.60c., Pittsburgh, for Bessemer Steel Bars and 1.70c., Pittsburgh, for Open Hearth Steel Bars. Iron Bars are nominally quoted at 1.80c., Pittsburgh, without any sales having been made because the material is so scarce.

**Old Material.**—The market this week has been very active, with a good demand for all grades and with prices steady. The supply of material seems to have increased steadily, and the market is getting back to a more normal state. The old prices continue to hold good. They are: No. 1 Wrought, $19.50 net; Iron Rails, $27.50 gross; Iron Axles, $26 net; Cast Borings, $10 gross; Wrought Turnings, $15.25 gross; Cast Scrap, $16 gross; Car Wheels, $19 gross; Heavy Melting Steel, $19 gross; Old Steel Rails, $20 gross.

## Cincinnati.

FIFTH AND MAIN STS., July 2, 1902.—(*By Telegraph.*)

There is still an active demand for spot Pig Iron. The supply from either Northern or Southern furnaces, however, continues to be confined to occasional lots, and the prices are irregular and vary considerably. It is well to note that there is a show of conservation, perhaps a slight reaction from the high water mark quoted last week for Southern No. 2 Foundry. There is a marked disposition here to hold the market from going any higher than it now is, but, of course, it is generally recognized that the situation is not being helped to a lower level by the strikes and strike talk and other factors which appear to be operating against maximum furnace productions. Still the fact that there is quite a little Pig Iron now selling and being offered on the basis of $16.50, Birmingham basis, for No. 2 Foundry is having an admitted effect against any higher prices for spot delivery stock. The Southern railroads have just notified shippers that until January 1 next freight rates ruling at the date of sale will be protected, but that after that date all shipments will be at the freight rates ruling upon the date of said shipments. On this account furnaces selling for 1903 delivery are doing so on the condition of buyers assuming the chance of higher or lower rates. The feeling is pretty generally prevalent that freight rates will be advanced before long. Freight rate from Hanging Rock district is $1.10 and from Birmingham $2.75. We quote, f.o.b. Cincinnati, for 1902 delivery as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $21.25 to $21.75 |
| Southern Coke, No. 2 | 20.75 to 21.25 |
| Southern Coke, No. 3 | 20.25 to 20.75 |
| Southern Coke, No. 4 | 19.75 to 20.25 |
| Southern Coke, No. 1 Soft | 21.25 to 21.75 |
| Southern Coke, No. 2 Soft | 20.75 to 21.25 |
| Southern Coke, Gray Forge | 19.75 to 20.25 |
| Southern Coke, Mottled | 19.75 to 20.25 |
| Ohio Silvery, No. 1 | 24.10 to 24.35 |
| Ohio Silvery, No. 2 | 23.60 to 24.10 |
| Lake Superior Coke, No. 1 | 24.60 to 25.10 |
| Lake Superior Coke, No. 2 | 24.10 to 24.60 |
| Lake Superior Coke, No. 3 | 23.60 to 24.10 |

*Car Wheel and Malleable Irons.*

| | |
|---|---|
| Standard Southern Car Wheel, chilling grades | $25.50 to $26.00 |
| Standard Southern Car Wheel, No. 2 | 25.00 to 25.50 |
| Lake Superior Car Wheel and Malleable | 25.00 to 26.00 |

Quotations for first six months of 1903, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $19.75 to $20.25 |
| Southern Coke, No. 2 | 19.25 to 19.75 |
| Southern Coke, No. 3 | 18.75 to 19.25 |
| Southern Coke, No. 4 | 18.25 to 18.75 |
| Southern Coke, Gray Forge | 18.25 to 18.75 |
| Southern Coke, Mottled | 18.25 to 18.75 |
| Southern Coke, No. 1 Soft | 19.75 to 20.25 |
| Southern Coke, No. 2 Soft | 19.25 to 19.75 |

**Plates and Bars.**—The market continues very strong and active on an unchanged basis. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.90c. to 2c., with half extras; same, in small lots, 2.20c., with full extras; Steel Bars in carload lots, 1.72c., with half extras; same, in small lots, 2.20c., with full extras; Angles, 2.30c. to 2.50c.; Plates, 3-16 inch and heavier, 2c.

**Old Material.**—There is an excellent demand, and the market is strong and about the same basis. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $19 to $20 per net ton; Iron Axles, $23 to $25 per net ton; Cast Machine Scrap, $14 to $14.50 per gross ton; Steel Rails, rolling mill lengths, $24 to $24.25; same, short lengths, $17 to $17.50 per gross ton; Car Wheels, $19 to $19.50 per gross ton.

## Birmingham.

BIRMINGHAM, ALA., June 30, 1902.

Environed by the surrounding conditions the Iron market could not be otherwise than firm. One is tempted to say that Iron is worth just what the seller chooses to ask for it, for prompt and nearby delivery. Some Silver Gray sold at $20 to the amount of about 400 tons, and $20 was paid for both No. 1 Foundry and No. 1 Soft. Some No. 2 Foundry sold at $19.50 in small lots, while a small sale was made of No. 4 Foundry at $19. No. 3 Foundry is $18.50 quoted, but the actual Iron would bring as much as No. 4 Foundry. Some Gray Forge to the amount of 400 tons was offered at $18, but did not go. It will go this week. For the balance of 1902 delivery sales have been made at figures running from 50c. to $1 less than above quotations. The demand for delivery for first half of 1903 increased, but there is an indisposition to quote actual prices obtained. The reports of basis of sales vary from $16.50 to $17.50, and up to $18. At the higher prices your correspondent is inclined to the belief that sales were few and far between.

At the present writing there is no disposition to take new business, for a settlement of the differences between the coal operators and the miners is necessary to the establishment of any assurance of continuous furnace operations. Heretofore, when differences could not be reconciled in the conferences of operators and miners, they were referred to the various local lodges and each lodge took action concerning them and arrived at an understanding. But at the annual convention just ended the adjournment was *sine die*, without a reference back to the local lodges for action. But the assertion was made by the spokesman for the miners that they would on July 1 cease work and stand by their demands until victory perched on their banners. This unusual course has caused much comment and has given rise to the belief that the course pursued was preconcerted and not developed by circumstances as they occurred. It has every appearance of having been a cut and dried programme carried out to the letter. The grounds on which the local miners were to base their claims for a change in the existing scale of wages were foreshadowed in the letter of last week and involved an eight-hour day, an advance of the minimum price for mining coal, an increase of the maximum price from 55c. to 60c. and a two weeks' pay day. Nothing less than a concession to all these demands would be accepted. The result was the meeting adjourned *sine die* without favorable action. The operators could pay no higher wages than now prevail with any hope of profit from their invested capital. In fact, one interest stated that under existing conditions their Coal business showed no profit. Another interest engaged in mining commercial Coal averred that the profits only balanced the cost of betterments and improvements in the way of protection to life and comfort of the operative. But there was that feeling, devoid of bluster, on the part of the miners that their proposition was their ultimatum and they would accept nothing else. The encroachments of Oil as a fuel in territory where Coal has heretofore had a practical monopoly were ignored, and the probability of the increasing competition lowering amount of sales and reducing price cut no figure in the conclusions. Usually the sympathy of the community is on the side of the strikers. But in this case reflecting people characterize the action of the miners as a great mistake. A strike involves approximately 12,000 men. In some of the mines in the district, particularly in Walker County, the union does not entirely control. So mining will not be wholly suspended. It is very generally believed that the leading officials of the Miners' Union knew that their demands would be rejected, and it is further believed that they were promulgated in sympathy with conditions in the Pennsylvania and other Eastern districts. There was an apparent unanimity among the miners at their convention in their demands, but it is understood that there is a cool, calculating, influential element among them dead against any prolonged strike, who will come to the front when the seriousness of the situation begins to be appreciated. There will be force then in the old saying, "When you can't get pudding, take pie." The action of the miners was anticipated by several large corporations, and some of the railroads laid in a three months' supply of Coal. A strike would force the banking of nearly all, if not all, the furnaces, for there is little, if any, of accumulated material for Iron making in reserve. In fact, some of them have been banked already in anticipation of what is to come. The effect will not end with the furnaces. It will extend beyond them, for there will be practically no output to fill maturing deliveries, on which buyers are dependent to keep their works going. Further complications are not anticipated and the general opinion is that "the clouds will soon roll by" and "peace reign once more in Warsaw."

The No. 3 Furnace of Republic Company, at Thomas, is increasing in efficiency right along, and if after all parts get down to smooth working it fails to turn out 8000 tons per month there will be great disappointment. As a Coke saver it promises to be a daisy.

## St. Louis.

CHEMICAL BUILDING, July 2, 1902.—(*By Telegraph.*)

**Pig Iron.**—Conditions in the Pig Iron market are very little changed, but there is, perhaps, a slightly heavier amount of inquiry for Iron to be delivered in July, August and September, and the tonnage of these individual requirements is in car lots and slightly heavier quantities. Offerings of Iron are not on any more liberal scale, and it is said that many inquiries have had to be refused, after submission to the furnace, on account of their being unable to fulfill requirements of delivery. Shipments on old contracts are still a point of complaint, and the prospect of the furnaces being able to catch up on their orders is said to be something unlikely to come to pass very soon. The following is the range of prices current for cash, f.o.b. St. Louis:

| | |
|---|---|
| Southern, No. 1 Foundry | $21.00 to $23.00 |
| Southern, No. 2 Foundry | 20.25 to 22.25 |
| Southern, No. 3 Foundry | 19.75 to 21.75 |
| Southern, No. 4 Foundry | 19.25 to 21.25 |
| No. 1 Soft | 20.75 to 22.75 |
| No. 2 Soft | 20.25 to 22.25 |
| Gray Forge | 18.50 to 19.00 |
| Southern Car Wheel Iron | .... to 24.00 |
| Malleable Bessemer | .... to 23.00 |
| Ohio Silvery, 8 per cent. Silicon | .... to 22.00 |
| Ohio Strong Softener, No. 1 | .... to 23.00 |
| Ohio Strong Softener, No. 2 | .... to 22.00 |

**Bars.**—The demand and inquiry being cared for by the jobbing trade for Iron and Steel Bars is referred to as of fair volume, and in the matter of prices no changes are to be noted. We quote from the mills: Iron Bars at 1.90c., Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2.25c., Steel Bars at 2.25c., full extras.

**Rails and Track Supplies.**—In the market for Rails and Track Supplies conditions are without change, and the production of the mills is well taken for months to come. In the matter of prices no changes are to be noted. We quote: Splice Bars at 2.10c. to 2.15c.; Bolts, Square Nuts, 3c. to 3.10c.; with Hexagon Nuts, 3.25c. to 3.30c.; Spikes, 2.35c. to 2.45c.

**Angles and Channels.**—The demand for Small Angles and Channels is reported by the jobbing trade to be of proportions satisfactory all around. For materials of this class 2.50c., base, continues to be the quotation.

**Sheets.**—Prices are on a firm basis in the market for all grades and sizes of Sheets, and among the jobbers the volume of trade being handled is said to be very satisfactory.

**Pig Lead.**—Dullness has been the ruling feature in this market for Pig Lead, and in the matter of prices nothing significant can be gained from the fluctuation. Chemical is quoted at 3.97½c., and Desilverized at 4c.

**Spelter.**—A more active set of conditions has dominated the market for Spelter the week under review, and transactions have been of considerable size and volume. For July and August futures 4.85c. is said to be asked.

## Pittsburgh.

(*By Telegraph.*)

PARK BUILDING, July 2, 1902.

**Pig Iron.**—The market is quiet but very strong, and scarcity of Pig Iron is more pronounced than ever. This is due to the fact that shipments of Coke are again somewhat delayed by scarcity of cars, and also to the fact that some of the Valley furnaces are not getting out their maximum product, and have not done so since the strike. We quote Bessemer Pig Iron at $20.25 to $21, at furnace. The higher price for shipment within the next three months. Forge Iron is $21, and No. 2 Foundry $22.50 to $22.75, f.o.b. Pittsburgh.

**Steel.**—The supply of Steel is a little better, but prices are very strong. We quote domestic Billets at $32 to $33, Pittsburgh, and note a sale of 4000 tons of Open Hearth Billets at $32, maker's works, for third quarter delivery; also a sale of 1000 tons of foreign Billets at $33, delivered.

*(By Mail.)*

A good deal has been said in the daily press in the past week in regard to the new Bessemer Steel plant to be built by some of the more important Valley blast furnace owners. The facts in regard to this matter are that some of the Valley blast furnaces have had up a number of times the matter of building a Bessemer Steel works, but nothing has ever come of it. Recently the matter was taken up again and options secured on several sites of land, but it is very doubtful whether the project will go through. The fact that the United States Steel Corporation are building a number of blast furnaces, and when these are completed, which will be some time next year, indicates to the Valley furnaces that some other outlet will have to be found for their surplus Pig Iron. This was probably the reason why the Steel plant matter has come up again, but we can state officially that nothing tangible has been done. The project has been injured to no little extent by premature newspaper publication. The holiday week finds the Iron trade somewhat quiet, but very firm. Good sized sales of Foundry Pig Iron are being made for delivery in second half of next year, and several blocks of Forge Iron have been sold at about $21, Pittsburgh, for shipment over second half of this year. Bessemer Iron is quiet, consumers being pretty well covered and very little available. Prices of Bessemer Iron are anywhere from $20.25 to $21, at furnace, depending on tonnage and deliveries wanted. The United States Steel Corporation have not been inquiring for any Pig Iron for a long time, notwithstanding reports to the contrary.

**Structural Material.**—A great deal of new work is coming up and a large tonnage of foreign Shapes is being imported into this country. Domestic mills are sold up for balance of this year and small lots of Beams and Channels continue to bring 2½c. to 3c. a pound. The Bridge and Structural shops never had as much work on their books as they have now. We quote as follows: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Mills and dealers who can make reasonably prompt deliveries have no trouble in getting 2½c. to 3c. per lb. for Shapes

**Rails.**—No large orders have been placed since our last report. It is claimed the mills have booked about 750,000 tons for 1903 delivery. We quote at $28, at mill.

**Muck Bar.**—There is a good demand, and Muck Bar for prompt shipment is very hard to obtain. We quote best grades at $36.50 to $37, Pittsburgh.

**Rods.**—The Rod market is somewhat quiet on account of slackening in demand for Nails and Wire. Prices are somewhat easier, and we quote Bessemer Rods at $36, at mill. The Newburg Rod mill of American Steel & Wire Company has closed down for repairs, and this will take about 6000 tons a month out of the market.

**Ferromanganese.**—As intimated in this report two weeks ago would be the case, foreign makers of Manganese have advanced prices, and German Ferro is held at $52 to $52.50, and English at about $53, in large lots, Pittsburgh.

**Sheets.**—We note a heavy demand for the heavier gauges of Sheets—that is, for Plate mill sizes—but demand for the lighter gauges is somewhat quiet, and the tone of the market is not so firm as it has been. Quite a number of Sheet mills throughout the country are now closed, principally for repairs and stock taking. The American Sheet Steel Company are centralizing operations at Vandergrift, and three or four of the small Sheet mills of this concern, among them the Apollo Mill, are being dismantled and removed to Vandergrift. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.90c., and No. 28 at 3c. For small lots from store jobbers charge from 10c. to 15c. per 100 lbs. advance. Galvanized Sheets are somewhat dull in demand. We quote at 70, 10, 5 and 2½ per cent. in carloads, while small lots bring 70 and 5 off. The above prices are f.o.b. at mill.

**Hoops and Bands.**—We note a fairly heavy demand, but no change in prices. We quote Hoops at 1.90c. for 250-ton lots and over, and 2c. in carloads. Bands are 1.60c. for Bessemer stock, 12 gauge and heavier, while for Open Hearth stock $2 per ton advance is charged.

**Plates.**—Tonnage continues heavy, and Plates for prompt shipment are said to have sold at very close to 2c., at mill. Carnegie Steel Company continue to quote on the basis of 1.60c. for Tank, but will not promise deliveries this year. The market on Plates is 1.75c. to 1.85c., depending on deliveries wanted by the buyer. There has been no change in official prices, which are as follows: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide 5c. extra per 100 lbs. Plate 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days.

**Bars.**—As far as new tonnage is concerned the market is somewhat quiet, but the mills are busy on old contracts, which will keep them running for months. We can also state that some good sized contracts have recently been made for Steel Bars for shipment over last six months at the full price of 1.60c., at mill. Iron Bars are very scarce for prompt delivery, and on account of high prices for Scrap and Pig Iron some mills are quoting $2 a ton above the fixed price. We quote Steel Bars at 1.60c., half extras, for carload and larger lots, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30 per lb. extra, the total weight of a size to determine the extra, regardless of length. We quote Iron Bars at 1.80c., Pittsburgh, extras as per National Bar Iron Card.

**Merchant Steel.**—Prices on the lower grades of Tool Steel are being shaded more or less by new mills that have recently started up and are seeking a market for their product. We quote Tire Steel at 2.25c. to 2.30c.; Sleigh Shoe, 2.25c. to 2.30c.; Open Hearth Spring, 2.50c. to 2.60c., and Toe Calk, 2.35c. to 2.45c. All these prices are for carloads and are f.o.b. at mill. Crucible Tool Steel is quoted at 6½c. to 8c. and 9c. for ordinary grades, at mill. Shafting is 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in basing territory.

**Skelp.**—The market is firm, with a good demand, and we quote Grooved Iron Skelp at 2.15c. to 2.20c., and Sheared at 2.25c. Grooved Steel Skelp is 2.20c. to 2.25c., at mill.

**Boiler Tubes.**—The market continues firm, and demand is sufficiently large to keep the mills fully employed. Discounts in carloads are as follows:

| *Boiler Tubes.* | Up to 22 feet. Per cent. |
|---|---|
| Steel. | |
| 1 to 1½ inch, inclusive | 45 |
| 2¾ inch to 5 inch, inclusive | 62½ |
| 1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive | 52½ |
| Iron. | |
| 1 to 1½ inch, inclusive | 42½ |
| 2¾ inch to 5 inch, inclusive | 50 |
| 1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive | 40 |

**Merchant Pipe.**—Considering the season of the year, demand is good and the tone of the market is very firm. Considerable new capacity in Pipe will soon be ready, the Labelle Steel Company, at Steubenville, having finished their Tube mill, while the Wheeling Steel & Iron Company, at Wheeling, are about ready to start. Discounts in carloads are as follows:

| *Merchant Pipe.* | Black. | Galvd. |
|---|---|---|
| ⅛ to ½ inch, inclusive | 60 | 48 |
| ¾ to 12 inch, inclusive | 67 | 55 |

**Coke.**—The *Courier* reports the output of Coke in the Connellsville region last week as 249,880 tons and shipments 12,069 cars. Price of Connellsville Furnace Coke on contracts is $2.25 and Foundry $2.75 to $3 a ton. However, Furnace Coke for prompt shipment is bringing $3 to $3.50 a ton.

**Scrap.**—Certain kinds of Scrap, especially Heavy Melting Stock, are very scarce and bring high prices. We quote Heavy Melting Stock at $22.50 to $23 in gross tons. No. 1 Railroad Wrought Scrap, $22, net tons; Cast Scrap, $19 to $19.50, net tons; Car Wheels, $21, gross tons; Wrought Turnings, $14, net tons; Cast Iron Borings, $11.50 to $11.75 in gross tons; Old Iron Rails, $27 to $27.50 in gross tons.

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**The Youngstown Tube Mill Started.**—PITTSBURGH, PA., July 2, 1902.—Tube Mill No. 1 of the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio, was placed in operation and is producing wrought iron pipe made from the company's double refined puddled iron. The company now have in operation their blast furnace, sheet bar mill, puddle department, a sheet department for the production of their exclusive new process galvanized and double refined puddled iron sheets, and the first of the three tube mills. The remaining two mills will be on in about 30 days. Work on the plant is progressing rapidly.

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Theodore Shaffer, president of the Amalgamated Association, has sent instructions to the men employed at the mills of the American Steel Hoop Company, in the Youngstown, Ohio, district, to continue at work. The new Amalgamated scale governing the mills of the American Steel Hoop Company has not been officially signed, some of the foot notes having yet to be arranged. A conference will be held in Pittsburgh on Wednesday, July 2, between officials of the American Steel Hoop Company and the Amalgamated Association, at which it is expected the scale will be arranged.

# The New York Machinery Market.

NEW YORK, July 2, 1902.

Another new concern is to embark in the building of heavy machine tools. The Ridgway Machine Tool Company is to be the style of the company. Incorporation papers under the laws of Pennsylvania are now being prepared. A large plant is to be erected at Ridgway, Pa. Ground will be broken, and the erection of the buildings commenced within a few days. The new company will devote their efforts entirely to the building of heavy machine tools, including boring mills, planers and lathes. The field of smaller tools will not be touched. C. M. Conradson has been engaged as designer. The president of the company is Harry R. Hyde; vice-president, Perry R. Smith; treasurer, E. C. Powell; secretary, J. E. Logan. The directors are as follows: Harry R. Hyde, E. R. Smith, C. M. Conradson, J. K. Gardiner, John Curry, Robert J. Powell and W. S. Thayer.

The William R. Trigg Company, ship builders of Richmond, Va., issued a mortgage of $1,000,000 to the Richmond Trust & Deposit Company last week. We are advised on excellent authority that the money thus obtained is to be devoted to the extension of their plant. The improvements contemplated will be very extensive, although nothing but a general idea of their scope has as yet been formed. The working out of the details is now in the hands of E. T. D. Myers, Jr., C. E., who is to be in charge of the work.

A new electrically driven plant is to be erected at Cleveland by the Cleveland Pneumatic Tool Companuy. H. W. Cole, secretary and treasurer of the company, informs us that the necessary land has been purchased and that operations will be begun at once. No new equipment has been secured as yet.

The United States Steel Company of West Everett, Mass., are in the market for six 125 horse-power boilers and two 200 kw. direct connected generating sets. A new machine shop is just being completed, and the equipment is being purchased. H. B. Whall is the president of the company, Charles S. Miller is treasurer and Eugene Edwards, general manager.

In connection with the equipment of the new power station of the United Railroads of San Francisco, the American Blower Company of 141 Broadway, New York, and Detroit, obtained the order for the mechanical draft apparatus. It consists of two 320-inch full housed fans direct connected to 12 x 16 inch vertical engines. It is to be operated in connection with 8000 horse-power of boilers. When completed this will be the largest power station on the Pacific Coast. Charles C. Moore & Co. of San Francisco are placing the orders.

The New Orleans & Southwestern Railroad Company have placed their order for the three large engines to be installed at Thibadeaux, La. The order was placed with the Fulton Iron Works of 253 Broadway, New York, and called for three 26 x 54 x 54 inch horizontal cross compound Corliss engines to be direct connected to 1000 kw. Bullock generators.

Aside from the machine tool situation there is little of interest in machinery circles. General trade is not particularly active, and in all quarters the opinion that a light summer has set in finds expression. In the engine, boiler and pump trades there is apparently a desire to eagerly take on all the business in sight for, despite the fact that all the factories are overcrowded with work, prices are not being maintained rigidly. In the machine tool trade conditions are quite the reverse, and an unusual firmness of values has been brought about. This is, of course, due to the following of the initiative which the lathe and radial drill builders took. The advanced prices of lathes are now in effect throughout the country. The last advances became operative yesterday. Machine tool merchants and the various representatives of the builders involved took advantage of the situation, and freely informed their customers of the impending advance, and as a result numerous small orders came tumbling in during the last hours of June. It has turned out that the lathe advances were not a flat 10 per cent. all around. Some of the concerns included in the agreement are said to have increased but 5 per cent., and others sent their figures up as high as 15. The advance rather averaged 10 per cent., taking all collectively.

A number of well-known concerns have followed the lead of the lathe builders, and advanced their prices on other tools. One concern building shapers and planers as well as lathes added 5 per cent. to these machines. A Western firm of drill press manufacturers went up 5 per cent. on their product. On the other hand, a well-known New England concern building shapers and milling machines in addition to lathes advanced only on their lathes. Another well-known concern in the lathe agreement allowed their drill press prices to remain.

For some time an agreement or at least broad relationship has existed among the builders of milling machines, and as noted a short time ago prices were raised. Consequently it is not expected that the present prices will be changed. That further concerted action will not be taken by builders of any certain class of machine tools is generally doubted. Manufacturers will, it is thought, content themselves at present with availing themselves individually of the influence which will pervade the trade as a result of the lathe builders' action. There is no doubt that the great majority, if not all, machine tool builders are heartily in favor of better prices at this time, and that for a short time at least higher prices will prevail. The condition of trade alone will determine the length of time. The purchasing agent of a great industrial establishment building a plant which will require equipment footing well up into six figures, said yesterday: "It may be a long time before we buy the equipment, for I don't think that this abnormally high market will last much longer. I never saw anything go up that didn't come down, and with immediate delivery iron up around $25 it is pretty nearly time that things commenced to drop. With their production booked months ahead, machine tool families can hold together very nicely, but as soon as they become hungry for orders the peace and harmony may become disturbed somewhat. At any rate, I won't be in any hurry to keep their shops filled." If other buyers take this view there may be a "hungry" feeling that will disturb the "peace and harmony."

Machine tool merchants express the view that a falling off in business is expected. They are preparing for a very quiet summer. There was quite a stir in the trade over the report that the International Steam Pump Company were about to place orders for the equipment of their Harrison, N. J., shop. The report proved incorrect, inasmuch as that no list has been prepared for the Harrison equipment, and probably will not be for some months. The lists now in the trade have been sent out some time ago, and as we previously mentioned were for additions to the equipment of the International shops at Cambridge, Holyoke, Buffalo, Brooklyn and Cincinnati. There were some good sized tools on the lists, most of which have been ordered. The entire amount to be expended in bringing the various pump shops up to the efficiency demanded immediately will be about $132,000.

The International Fire Engine Company, 85 Liberty street, are improving their various plants. George R. Bidwell, formerly collector of the Port of New York, is now the president of the company, and he has taken personal charge of the work of bringing the plants, and, in fact, the entire fire engine industry of this country to a more efficient basis. The plants at Elmira, Seneca Falls, Chicago and Cincinnati are undergoing complete reorganization. At the La France plant, at Elmira, where the building of "apparatus," which includes fire trucks, hose wagons, &c., will be concentrated for the Eastern trade, about $75,000 is being expended in new machinery. The Chicago plant will be equipped for the building of fire extinguishers and chemical engines exclusively. Aside from the present changes very material extensions are planned for the future in connection with this plant. At the other plants all the obsolete machinery is being weeded out to make room for more modern equipment. A new device is being brought out in the shape of a truck equipped with pneumatic machinery for raising the ladders by compressed air. During the last four months the profits of the company have increased 40 per cent., as compared with the corresponding period of a year ago.

J. Hampton Dougherty, Commissioner Department of Water Supply, Gas and Electricity, New York, is now asking for bids for the erection and complete equipment of a pumping plant to be erected at the Milburn engine house, Baldwins, L. I. Bids will be opened on July 10.

J. H. Logan, general manager of the Twentieth Century Portland Cement Company of Fenton, Mich., informs us that the machinery equipment for their plant is now being purchased. The plant is to have a capacity of 1000 barrels, and is to be operated under the wet process. The structure steel for the buildings is also about to be purchased, as well as 380 tons of 60-pound steel rails. The company are to build a private railroad connecting their works and lands with the main lines of the railroad. Robert W. Hunt & Co. have served as experts in connection with the project. The company were incorporated with a capital of $75,000, and recently obtained $600,000 on mortgage for the erection of the plant from the Imperial Trust Company of Jersey City.

McClave, Hamilton & Co. were awarded the contract for the new electric plant to be installed in the department store of A. D. Mathews & Sons, Brooklyn. Ridgway dynamos and engines will be installed.

Walther & Co., paper manufacturers of Brooklyn, placed their engine order with Hooven, Owens & Rentschler of 39 and 41 Cortlandt street.

M. H. Treadwell & Co. of 95 and 97 Liberty street have just closed contracts for six sinder cars and forgings and castings for increasing the equipment of the acid department of the New Jersey Zinc Company, at Hazard, Pa. They also received an order for three cinder cars for the Central Works at Cleveland of the American Steel & Wire Company, and for forgings, castings and machine work in connection with 12 complete open hearth furnaces, to be erected at Donora, Pa., by the Union Steel Company.

## Chicago Machinery Market.

CHICAGO, ILL., June 30, 1902.

In the line of machine tools the month of June has witnessed a falling off in the volume of new business, yet small orders are being received continuously and steadily, and, for this time of the year, there is a general expression of opinion that business is better than ever before experienced. But while the sales department is receiving fewer large orders, the manufacturers are busy making shipments on previous contracts, and are still rushed to make deliveries on contracts not yet filled.

Manufacturers of cranes, hoists and power transmitting machinery in general, however, have continued to experience a most extraordinary demand, the works of the principal manufacturers being pushed to their utmost capacity, and not a few of them working extra time in several departments. There is, too, a broadening of the territory from which inquiries are received, and while manufacturers at one point find an urgent demand from the Central and Western States, others are receiving their most important orders and inquiries from New England and the South. The demand is so diversified and so extensive as to indicate a very large addition to the manufacturing capacity of the country. As indicating the broad character of the business already in hand it may be noted that among the recent purchasers are: Railroad companies, steels mills and wire works, electric supply companies, car works, machine shops, glass manufactures, foundries, mills, engine and boiler works, cement factories, textile manufactures, both North and South, rice mills and oil refineries. Indeed, never before, it is believed, has there been such a general demand for newer transmission machinery. It is notable that the foreign demand is again improving, inquiries having been received in large volume throughout the month of June. Manufacturers of this class of machinery have from time to time during the past year materially increased their equipment, until now the total capacity of the various producers is from one to five times greater than it was 18 months ago. Manufacturers still note that work is being delayed some by the tardy delivery of machine tools by the scarcity of pig iron and by the difficulty of obtaining structural material and shafting as contracted for. It is gratifying to note that terms of contracts are met to the letter, settlements being made promptly and satisfactorily in most cases. Taken all in all, the outlook for business both present and prospective seems merely to be a question of capacity and material.

A few manufacturers of engines, boilers and pumps note some decrease in the number of inquiries during June for the first time in many months, but others find no diminution in business; in fact, from a few industries orders are being received in larger volume than ever, and all manufacturers of engines and boilers, with few exceptions, have orders booked for many months ahead, and not a few are months behind in deliveries. Little effort is being made to secure new orders, the mail bringing as much business as most producers can take care of. In some sections labor troubles, among the molders, are disquieting, as most manufacturers are sadly in need of castings. A number of manufacturers also note another difficulty against which they have to contend; the almost impossibility of securing ample supplies not only of iron and steel, but of lumber, cement and stone, for construction work at anything like reasonable prices. The conditions noted in regard to cranes and power transmitting machinery are also true of engine, boiler and pump producers—that is, while business is best in the South and East for some, the West is the most fertile territory for others. The various works are constantly increasing their capacity by the addition of new equipment.

In the line of tools and supplies activity has continued throughout the month of June, some plants working both day and night, notwithstanding that this is usually a dull season. As in other departments there is a record of increasing capacity by the addition of new machinery and the construction of larger buildings. Shipments are being made to both Southern and Eastern States, as well as throughout the West, everything being at high pressure.

### Machine Tools.

The B. F. Barnes Company, Rockford, Ill., say that orders have been holding up very well indeed; in fact, new business has been a good deal better this month than they had looked for at this season of the year. Inquiries regarding tools, requests for prices, &c., are also very satisfactory, and indicate, they think, a continuance of good business later on.

McDowell, Stocker & Co., Chicago, state that their machinery trade for this month has been very satisfactory, but the volume of business will not be equal to that of last month. While the orders they are receiving are not large ones, they are coming in steadily and indicate a very even trade. For this time of the year business is very much better than ever before experienced.

The Anderson Tool Company, Anderson, Ind., have greatly improved their plant, and are now running to full capacity.

The Ransom Mfg. Company, Oshkosh, Wis., report a good volume of business. Trade has been especially lively on their 20-inch motor driven water tool grinder.

The Geo. Whiting Company, Chicago, now have their works in shape for turning out punching, shearing and bending machinery for boiler makers, sheet steel and iron workers of all kinds, having at present several machines in process of manufacture. They report a very satisfactory inquiry for machinery in their line, and expect to be running with a full force early in July.

### Cranes and Transmission Machinery.

Pawling & Harnischfeger, Wilwaukee, state that the demand for electric cranes and hoists remains highly satisfactory. They are at present booking orders on an average of one crane per day, which fully equals the capacity of their works. There is a noticeable broadening of inquiries particularly from the Central and Western States, and the prospect for sales in these sections seems very good. The foreign demand is bettering, judging from the inquiries within the last month. Prominent among the recent purchasers of cranes and hoists are the following: Pennsylvania Railroad Company, West Philadelphia, one 6-ton trolley; Grand Crossing Tack Company, Chicago, one 75-ton ladle crane with 25-ton auxiliary trolley; Stanley Electric Mfg. Company, Pittsfield, Mass., for Michigan Lake Superior Power Company, Sault Ste. Marie, Mich., two 15-ton cranes; S. Morgan-Smith Company, York, Pa., one 10-ton crane; Pressed Steel Car Company, Allegheny, Pa., one 5-ton special hoist; the Westinghouse Machine Company, East Pittsburgh, one 10-ton crane; Pittsburgh Plate Glass Company, Ford City, Pa., one 3-ton crane; Bethlehem Steel Company, Bethlehem, Pa., one 30-ton crane with 10-ton auxiliary trolley; three 2-ton chain block cranes; the A. & F. Brown Company, Elizabethport, N. J., one 15-ton crane with 3½-ton auxiliary hoist; Jas. B. Clow & Sons, Newcomerstown, Ohio, one 5-ton hoist; American Foundry & Construction Company, Hazlewood, Pa., one 5-ton special hoist; Buffalo Foundry Company, Buffalo, N. Y., two 30-ton cranes with 5-ton auxiliary hoist; four 10-ton cranes; Ball Engine Company, Erie, Pa., one 25-ton crane with 5-ton auxiliary hoist.

The Dodge Mfg. Company, Mishawaka, Ind., report business of the greatest activity with heavy pressure for quick shipments. Their works are being operated extra time in several departments, and more business is being closed at the present time than their output amounts to. There is also an extensive inquiry that would indicate large additions to the manufacturing capacity of the country. They are working on large orders for the Colorado Iron & Fuel Company, including some heavy fly wheels up to 105 tons each and other rolling mill equipment. They also have in hand extensive work for some New England mills and for cotton mills in the South. Several cement mill outfits are now in various stages of completion in their works, including the Great Northern Cement Company, the Egyptian Portland Cement Company, Iola Portland Cement Company, Elk Rapids Portland Cement Company, and others. Extensive purchases are noted from the oil and rice mill districts in Texas. Never has there been such a demand for the American system of rope transmission and for fly wheels and fly wheel laggings as at this time. Their machinery equipment has been materially increased from time to time, and even now much work is being delayed owing to tardy deliveries from builders of machine tools with whom they have placed orders. The scarcity of some grades of pig iron, structural material and shafting has added to their embarrassment in filling orders promptly.

The Northern Electrical Mfg. Company, Madison, Wis., say they have no cause for complaint, and feel that a generous public has given them their full share of patronage. They have increased the capacity of their works twice during the past two years. Within the last 12 months they have added to the plant and equipment an investment of about $100,000, but, in spite of this, they have found it impossible to keep pace with the increasing demand for their product, so that they are now considering the advisability of further additions, which, when completed, will give them a total capacity equal to about five times that of the works 18 months ago. As to the character of business transacted, they say they can see nothing indicating a falling off in quality. Terms are being well lived up to, and clients are making prompt and satisfactory settlements.

The Stephens-Adamson Mfg. Company, Chicago, are very busy executing contracts that have been taken for power transmission equipments for new plants that are being erected particularly in the South. Their capacity is crowded to the utmost, and will be for some time to come in taking care of contracts already booked. A good trade in current orders is noted at prices considerably higher than 60 days ago. They have been obliged to relieve their machine shop by building a gallery in one end, in which they have installed the pattern shop. The outlook for future business is all they could ask for, and the question seems to be simply that of capacity.

The W. A. Jones Foundry & Machine Company, Chicago, find business very good. Their books are filled with orders, which will keep them busy for some time to come. The outlook for the future is very favorable. They are having a

large number of foreign inquiries for the 54-inch pulley turning and boring machine, which they build.

The Industrial Works, Bay City, Mich., say business continues quite as satisfactory as reported in previous months.

**Engines and Boilers.**

S. Freeman & Sons Mfg. Company, Racine, Wis., say that their boiler business for a long time past has been as good as they could expect. They have had all they could possibly do, and at the present time are having a great number of inquiries, and a good many orders are being placed. They have taken some very nice contracts, and are now working upon them, among which are six 250 horse-power corrugated furnace boilers for the Union Pacific Railroad shops at Omaha, Neb.; one 100 horse-power corrugated furnace boiler for the Sanitary Laundry Company, Chicago, Ill.; one 250 horse-power corrugated furnace boiler for the Racine Woolen Mill Company, Racine, Wis.; two 150 horse-power corrugated furnace boilers for the Duluth, South Shore & Atlantic Railroad Company, Marquette, Mich.; four 72 inch by 16 feet horizontal tubular boilers for the Utah Fuel Company, Sunnyside, Utah; eight 72 inch by 18 feet tubular boilers for the Oxnard Construction Company, Caro, Mich.; five 60 inch by 16 feet horizontal tubular boilers for the Wright Lumber Company, Merrill, Wis.; one 300 horse-power corrugated furnace boiler for the J I. Case Plow Works, Racine, Wis.; one 300 horse-power corrugated furnace boiler for the Janesville Machine Company, Janesville, Wis.; one 100 horse-power corrugated furnace boiler for the city of Charlotte, Mich., and one 125 horse-power corrugated furnace boiler for the Janesville Cement Post Company, Janesville, Wis.; one 150 horse-power corrugated furnace boiler for J. Thompson & Sons, Beloit, Wis. The above are only a few of the orders they have on their books. They are figuring on some very large contracts for corrugated furnace boilers in all parts of the country and have the promise of several orders. They expect to have all they can do and possibly a good deal more for the rest of this year.

The Otto Gas Engine Company, Chicago, report sales of engines and water supply goods and coal handling machinery running heavier than ever before. They say it is difficult to obtain the supplies which are necessary to their construction work, such as iron, steel, lumber, cement and stone at any price in a reasonable time.

The Edward P. Allis Works of the Allis-Chalmers Company, Milwaukee, say they have noticed no diminution in the volume of business obtained during June.

The Nordberg Mfg. Company, Milwaukee, Wis., say they are noticing an easing up in inquiries for the first time in many months. Their works are still many months behind in deliveries, and they have made no special effort to secure orders other than those which come through the mail. The strike of the molders in the foundries there is beginning to trouble the machine shops very seriously, as most of them are sadly in want of castings. Aside from the labor troubles the outlook is most promising.

The Union Steam Pump Company, Battle Creek, Mich., find business is keeping up in a wonderful manner, and they are making large shipments to all parts of the country. They are continually adding new machinery to their equipment in order to keep up with the demand.

The Webster Mfg. Company, Chicago, report business very good. They say if they had the capacity they could fill their shop with three times the number of orders they have already accepted. Business in the South and East is ecpecially good.

The Strang Engine Company, Chicago, are not progressing as rapidly as they had expected, owing to unexpected delays in obtaining castings, machine tools, &c. They are, however, working on the first ten 5 horse-power engines, and have sent out patterns for 3 horse-power castings. During the next month they expect to have some finished product as a basis for putting engines on the market. Fortunately they escaped any damages during the recent flood at Harvey, Ill., and did not have to stop their machinery. Their plant is proving most satisfactory, and they will equip their engines with pumps of their own design.

The Vilter Mfg. Company, Milwaukee, Wis., state that while inquiries have not been so plentiful of late as they were for a considerable time prior, still they have received quite a few inquiries indicating that purchases in their line are still largely considered, and they also have secured many new orders of late, particularly for their improved high grade Corliss steam engines.

The Hoefer Mfg. Company, Freeport, Ill., are very much crowded with orders on tools, which is very encouraging to them.

The Whiting Foundry Equipment Company, Harvey, Ill., report orders and inquiries keeping up fully to their expectations. They are making about $30,000 worth of improvements in the way of buildings, tools and equipment.

Charles H. Besley & Co., Chicago, report business very good. They are receiving orders for Gardner grinders from all parts of the country. Within the past month shipments have been made to California, New York, Rhode Island, Connecticut and New Jersey. Many shipments of Helmet oil, Badger and Bonanza grease cups are being made to all parts of the country. Numerous inquiries for catalogues and circular letters relating to specialties, as well as requests for general catalogues, estimates and prices on shop equipments, indicate a healthful condition of trade throughout the country.

The Gardner-Governor Company, Quincy, Ill., say activity of business in June has continued unabated. It has been exceptionally heavy in all lines; in fact, as heavy as in any month during the year. They are endeavoring to increase their working force, and are adding some new machinery. They will shortly install electric cranes in their plant, orders for which have already been placed.

The Novelty Iron Works, Dubuque, Iowa, report a continued rush of orders, although this is usually their dull season. The trade in shingle sawing machines is increasing, most shipments being made to Southern and Eastern points. The company now has a solicitor in England who is appointing agents for export to the British colonies. The outlook for business is better than ever, and this firm expects to be taxed to their full capacity in filling orders for the improved power hammer, which is sold principally through the heavy hardware jobbers.

The D. Clint Prescott Company, Menominee, Mich., report their business continually on the increase, and they are working night and day at the present time, in order to give more room in their machine shop. The pattern shop, which was formerly located in the machine shop, is being moved into a new pattern shop now in course of construction. This pattern and carpenter shop will be fitted with the latest wood working tools. The company contemplate the erection of a new brick and steel foundry, to be fitted with the latest appliances, but it is possible that they may not get to it this year.

## The Philadelphia Machinery Market.

PHILADELPHIA, PA., June 30, 1902.

A slight falling off is noticeable in the volume of new business in the Philadelphia machinery market when compared with that of last month. In comparison, however, with the business of the same period last year, the balance is materially better. Under ordinary conditions some let up would have been expected at this season, and taking into consideration the complications with which the trade has been confronted during the past six weeks, business may be said to be in good condition. Labor difficulties, resulting in the almost complete stoppage of the supply of anthracite coal, together with the shortage of pig iron, steel, &c., have done much to restrict trade.

The anthracite coal miners' strike continues, and nearly all manufacturers, not only those in machinery lines, have resorted to the use of bituminous coal as fuel. A few exceptions are noticeable where special facilities for storage were available. Prices of fuel have advanced materially, and anthracite coal can only be had at what would seem to be exhorbitant prices, and then only in a few grades, and even these are scarce. These conditions have not only greatly delayed dates of deliveries of tools, but have restricted quotations on inquiries for large work. Inquiries for the lighter class of tools have decreased, and some manufacturers are satisfied with the lessened demand, as it enables them to get a stock of such tools on hand, something that has been practically impossible for some time since.

There is no improvement to be noted in the foreign demand. A certain amount of business continues to be done, but there is no effort at present toward any general resumption of this trade, particularly with home market flourishing and raw material scarce.

Deliveries generally have been extended except in case of the smaller and lighter machine tools, which are in good supply. Heavy machinery and tools are of uncertain delivery. The delay in getting castings, shapes, &c., entering into their construction increases, and manufacturers are specifying no certain dates of delivery.

Iron and steel foundries continue extremely busy, and deliveries from these sources are not satisfactory. The inability to get pig iron and fuel promptly has interfered greatly, and a number of gray iron foundries have been compelled to shut down from time to time, owing to lack of pig or fuel.

The demand for heavy machinery, special tools, engines, boilers and cranes, continues the most active, and on these lines are also the most extended deliveries. The smaller machine tools, &c., have not been as active in demand, and a fair supply is on the dealers' floors. Machine shop supplies are not being delivered with any great promptitude.

Prices at this time are an interesting factor in the trade. The recent advance of 10 per cent. agreed upon by a number of manufacturers is taken as a move in the right direction, but it is generally believed that no move like the one mentioned can be successful unless all manufacturers agree, and, what is more important, stand by the agreement. It is the general opinion that with the prices for raw material advancing, fuel high, and in many instances increased wages being paid to labor, that it will not be possible to do busi-

ness profitably on the present basis of selling for any length of time.

Extensive improvements are to be made in Henry A. Hitner's Sons' machinery warehouse. A plot of ground fronting 561 feet along Commerce street, 443.3 feet along Arimingo street and 145.9 feet along Huntingdon street, is the site upon which the buildings are to be erected. These structures are: A one and two story shop measuring 375 x 84 feet; a two-story storage shed 154 x 90 feet, included in which is a boiler and engine house; a metal house, 62 x 56 feet, one-story high; a stable two stories high, 38 x 82 feet, capacity, 40 horses; an office building one-story high, 56 x 37 feet. The storage shed and metal house will be constructed with steel columns, wooden roof trusses and corrugated metal sides, the stable and office building of brick and metal with slate roofs. Two private sidings will be laid.

The Pennsylvania Railroad Company will, it is said, remove the car shops in Wilmington, Del., to a point of the Shellpot Branch, and that the new shops will be much larger and be equipped with the most modern machinery for the repair of cars, the change being made necessary owing to the elevation of the P. W. & B. R. R. tracks through the city of Wilmington.

Thomas H. Dallett & Co. report an increase in inquiries during the last weeks of the month, which more than equalized a slight falling off during the early weeks. The various departments of this plant continues very busy, and some good new business has been booked. Recent shipments include electric portable and rope driven drills for delivery in Eastern, Western and local territory. A satisfactory trade is also reported in pneumatic tools, while several stone dressing machines have been shipped to New England parties.

The Hess Machine Company continue quite active. Inquiries and orders have been in fair volume, and some good bookings have been recently made. Two sets of file making machines have been shipped for export to Germany and two sets for English parties. A large amount of work for the home trade is also in course of erection.

Mayer & Co., file manufacturers, are now occupying their new offices, recently completed, and have installed considerable new machinery in the addition recently built to their plant. This firm report business conditions as most favorable, their product being shipped to all parts of the country. Mayer & Co. are in the market for a power shears for cutting file steel; an air compressor, and overhead tramways for further equipment of their plant.

The Philadelphia Pneumatic Tool Company have become settled in their new shops at Twenty-first street and Allegheny avenue, which has been equipped with every modern facility for the manufacture of their various pneumatic tools. Some delay incident to removal has been caused in deliveries, but it is expected that by running the plant on double time orders can be caught up with at an early date. Some of the recent orders for tools have been large, and shipments to the various steel works, railroads and shipbuilding companies, as well as other concerns, are constantly being made.

The Philadelphia Machine Tool Company are very busy on a large run of heavy machinery, double and straight sided presses, straightening rolls and heavy power presses. Inquiries are said to be good, and prospects of future business excellent. Some recent shipments include a universal foundry testing machine for tensile and transverse strain of 5000-pound capacity for New York parties. A special wire testing machine for testing the bending strain of wire under load, capacity 100 pounds, has been shipped to Louisiana parties; a number of file grinding machines have been delivered to Mayer & Co. of this city, and several large size standard presses have been shipped to local and Western parties.

The Franklin Machine Works, Incorporated, continue to operate all departments at their best capacity. Inquiries are numerous, covering their whole line of tools, and some very satisfactory business has been taken. Several milling machines and horizontal floor boring, milling and drilling machines have been shipped for delivery in Eastern and Western territory as well as for local delivery. Several cold saw cutting off machines have also been delivered to New England parties.

Israel H. Johnson, Jr., & Co. continue busy in all departments of their plant. The improvement to their erecting shop and new office, reported last month, are progressing satisfactorily. Inquiries and orders are numerous, and a number of large lathes are in course of construction. Among recent shipments may be mentioned: One 36 inch by 46 feet bed lathe, equipped with two sets of head and tail stocks and carriages for the Tioga Steel & Forge Company, Philadelphia, Pa. Large lathes have also been shipped to the West and to Eastern parties.

F. R. Phillips & Sons Company have commenced shipments on their contracts for tin mills and machinery to the Huntington Tin & Planished Plate Company of Huntington, W. Va., and the Juniota Steel & Iron Company, Greencastle, Ind. They have contract with the latter company for the entire equipment of hot mills, tandem cold rolling mills, doubling shears, squaring shears, bar shears, lathe, &c. This together with other contracts they have on hand, keep the Gruson Iron Works, with whom they are interested, very busy.

The Southwark Foundry & Machine Company continue busy on a large line of work. Inquiries and orders are being received in a satisfactory manner, and the general condition of the market is considered favorable.

The American Pulley Company report an increased trade for their product in England and the English colonies, while the active demand in South America and Mexico continues, and that of the United States has improved. The general demand at this season usually has a downward tendency, and the present conditions are quite satisfactory to the company. Some recent shipments include the entire equipment for the new Union Pacific Railroad shops at Omaha, Neb., while carload shipments to St. Louis, Chicago and to the far West have also been made. The local and nearby trade is also said to be very good.

The George V. Cresson Company, power transmission machinery, &c., have a large amount of work on hand, and all departments are being operated at their full capacity. There is a good volume of inquiries constantly coming in, and a fair proportion of orders being taken. Power transmission machinery is being shipped to all parts of the United States and other foreign countries, and conditions generally and particularly in view of existing uncertainties is said to be very satisfactory.

The Link-Belt Engineering Company have completed the addition to their drafting department and are preparing to occupy the same. Inquiries recently have been numerous, particularly for coal storage plants, which have no doubt been brought out by the shortage of fuel now prevalent, and the estimating department is very busy on this and other work. A fair percentage of general work is being taken, and all departments are working at their full capacity. Shipments of a general nature are being made continually.

The Tabor Mfg. Company are extremely busy, work now on hand being sufficient to keep the shop running on double time for fully four months. Inquiries for molding machines of various types are numerous, and some good orders have been taken. Among others they are building for the Bethlehem Steel Company a new triple molding machine with two power ramming elements. The distance between the strain rods of the swinging yoke of which is 9 feet in the clear. This machine will weigh, when completed, close to 60,000 pounds, and is by far the largest molding machine ever constructed. It is intended for use in making the molds for the gray iron casting sections of the tubing for the Hudson River tunnel, for which the Bethlehem Steel Company have the contract. Sand will be supplied from the machine from overhead conveyers, and a complete system for handling both mold and castings will be installed. Foreign trade with the Tabor Company is satisfactory, orders are now being received from England for machines using snap flask molds, the use of which heretofore is said to have been very limited in English foundries. A number of machines of various types have been shipped for export to England, and six are now under way. Among some of the recent domestic shipments may be mentioned a carload comprising ten machines for Western parties. These machines are of the split pattern type, taking in molds from 11 x 28 to 11 x 48 inches, and will be used on radiator work. A carload of machines of the vibrator frame type have also been shipped to New Britain, Conn. These are for use on hardware castings.

The Eynon-Evans Mfg. Company have recently installed a number of their jet blowers for gas producers in several large plants. Orders have also been taken for a number of condensers and several are in course of installation. Their pattern shop still continues busy on a line of large patterns, while the machine shops and the foundry have their full quota of work. Business conditions generally remain satisfactory, although some falling off in inquiries, not unusual at this time of the year, have been noticed.

The Energy Elevator Company have recently installed a number of lifts at various summer resorts, including Wildwood, Spring Lake and Sea Isle City, N. J. A large freight lift has been shipped for Hondo, Texas, delivery and contracts have been closed for a power elevator for a local livery stable; a carriage lift for Latrobe, Pa.; a large power elevator for Moorestown, N. J., parties, and for several lifts in "The Model Dwelling" in this city. The general conditions of trade are considered very favorable by the Energy Company, a large number of satisfactory inquiries are being received and many orders booked.

There is no abatement in active operations at the Baldwin Locomotive Works. Every department is being pushed to its very best capacity, and improvements and facilities for increasing the same are constantly being planned and made. Over 12,000 men are now employed at the local plant, and over 1200 are on the rolls of the works at Burnham, Pa. The new tank shop is well under way, the first and second floors being already occupied, a number of tools being operated in the sheet metal department of the new shop, although building operations have not yet extended to such a degree that the roof can be put on. This company have a large amount of work ahead, and orders are being

constantly received. Some recent shipments of engines include fast express locomotives of the Atlantic type for the Philadelphia & Reading Railroad Company, ten-wheel passenger engines for the Southern Pacific & Northern Pacific Railroad, consolidation freight engines for the Pennsylvania Railroad Company and freight engines for the Atchinson, Topeka & Santa Fé Railroad. A heavy engine has also been shipped overland via Seattle, Wash., for the Seoul Chemulpo Railroad, Corea, and a number of smaller engines have been delivered to various individual concerns.

The Royersford Foundry & Machine Company, Royersford, Pa., have completed the various additions and equipments to their plant, and report the general business conditions favorable. Inquiries continue in fair volume, and a number of good orders have been taken. Among recent shipments may be mentioned a No. 3 single punch for Thos. Diamond, New York City, and a No. 3 combined punch and shear has been shipped to the Niles Tool Works.

## New York

NEW YORK, July 2, 1902.

**Pig Iron.**—The situation is becoming more and more serious, with the strikes affecting many Eastern furnaces, some plants in Virginia and in the Ohio Valley, and now, too, in the Birmingham district. Consumers, the majority of whom are covered to the end of the year, are not getting the Pig Iron contracted for, and are forced to piece out as well as they can. In that way a good deal of Scotch, English and German Pig Iron is being purchased, and a good deal of it is being offered. Some foreign Pig Iron is being sold on analysis only, which is not finding favor with all buyers. Some good lots have been sold, among them one block of English Iron for Pipe purposes at a shade under $20, ex-ship. For Scotch and English Foundry Irons, mixed, No. 1 and No. 3, $20.50 to $21.50 is asked, while for Scotch makers' brands, No| 1, $22 to $22.50 is paid. So far as we can learn very little is doing in this section for delivery in 1903, buyers preferring to await developments. It is difficult to quote American Pig Irons for nearby delivery, and the following figures are nominal: Northern Iron, at tidewater, No. 1 X, $23.50 to $25; No. 2 X, $22.75 to $23.50; No. 2 Plain, $22.25 to $22.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $22.50 to $23.50; No. 2 Foundry, $21.75 to $22.50; No. 3 Foundry, $21.25 to $21.75.

**Cast Iron Pipe.**—The difficulties of making deliveries on old contracts continue so that the shops cannot take any new business guaranteeing deliveries.

**Steel Rails.**—The Eastern mills do not report much additional business for 1903. As indicating the condition of the market for early delivery we may note the fact that a prominent Copper company were forced to purchase 5000 tons of Relayers because new Steel Rails could not be obtained in the required time.

**Finished Iron and Steel.**—Among the contracts for buildings recently taken in this city are the Blair and the Butterick buildings. There is a very large amount of business in sight. We quote at tidewater as follows, but must add that for small lots and for prompt delivery much higher prices are being obtained for Structural Material and for Plates: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 2c. to 2.25c.; Tees, 2c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c.; Sheared Steel Plates are 2c. to 2.10c. for Tank, 2.10c. to 2.20c. for Flange, 2.25c. to 2.40c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.95c. to 2.05c.

## Iron and Industrial Stocks.

The stock market has been rather dull and lifeless. The United States Steel issues have fluctuated within a comparatively narrow range in spite of the splendid showing made by the statement of earnings for the first six months. There is every reason to believe from the condition of the industry that the next quarter will display even greater figures. Colorado Fuel & Iron has had some pyrotechnics earlier in the week, owing to the action of the directors in passing the dividend. In Philadelphia Cambria Steel had a burst of activity on Monday and on Tuesday, the stock crossing 25 in the latter day.

**American Car & Foundry Company.**—The annual report shows the following:

| | 1902. | 1901. | Increase. |
|---|---|---|---|
| Earnings, all sources | $5,503,928 | $4,915,393 | $588,535 |
| Sale of patents | ..... | 100.000 | *100.000 |
| Total earnings | $5,503,928 | $5,015.393 | $488,535 |
| Renewals, repairs, &c | 817.275 | 633,925 | 183,350 |
| Balance | $4,686,653 | $4,381,468 | $305,185 |
| New construction | 391.051 | 325,641 | 65,410 |
| Net earnings | $4,295,602 | $4.055.827 | $239,775 |
| Dividends, preferred, 7 per cent. | 2.100.000 | 2,084,075 | 15,925 |
| Balance | $2,195,602 | $1,971,752 | $223,850 |
| Dividends, common, 2 per cent. | 600.000 | 595,450 | 4,550 |
| Surplus | $1,595,602 | $1,376,302 | $219,300 |
| Previous surplus | 5,074,949 | 3,698,647 | 1,376,302 |
| Total surplus | $6,670,551 | $5,074,949 | $1,595,602 |

* Decrease.

The balance sheet as of April 30, 1902, compares as follows:

*Assets.*

| | 1902. | 1901. | Increase. |
|---|---|---|---|
| Cost property, plants and other investments | $59,118,183 | $56,700,720 | $2,417,463 |
| Materials | 11,915,129 | 7,721,367 | 4,193,762 |
| Accounts receivable | 7,461,950 | 6,307,217 | 1,154,733 |
| Cash | 1,571,458 | 1,908.948 | *337,490 |
| Total assets | $80,066,720 | $72,638,252 | $7,428,468 |

*Liabilities.*

| | | | |
|---|---|---|---|
| Preferred stock | $30,000,000 | $30,000,000 | ..... |
| Common stock | 30,000,000 | 30,000,000 | ..... |
| Vouchers and notes payable | 12,925,793 | 7,283,153 | $5,642,640 |
| Pay rolls (paid May 10) | 470,376 | 280,150 | 190,226 |
| Surplus | 6,670,551 | 5,074,949 | 1,595,602 |
| Total liabilities | $80,066,720 | $72,638,252 | $7,428,468 |

* Decrease.

At the annual meeting the following new directors were elected: W. G. Oakman, Thomas H. West, Adolphus Bush and H. R. Duval. The retiring directors were George Hargreaves, L. J. Cox, F. E. Canda and C. R. Woodin. The other directors were re-elected.

**United States Steel Corporation.**—The following is the statement of earnings for the first six months of the current year:

*Net Earnings.*

| | | |
|---|---|---|
| January, 1902 | | $8,901,016 |
| February, 1902 | | 7,678,583 |
| March, 1902 | | 10,135,858 |
| April, 1902 | | 12,320,766 |
| May, 1902 | | 13,120,930 |
| June, 1902 (estimated) | | 12,250,000 |
| Total net earnings after deducting each month the expenditures for ordinary repairs, renewals and maintenance of plants, also interest on bonds and fixed charges of the subsidiary companies | | $64,407,153 |
| Deduct amounts set aside for the following purposes, viz.: | | |
| Sinking funds on bonds of subsidiary companies | $240,428 | |
| Depreciation and reserve funds | 6,556.028 | |
| | | 6,796,456 |
| Balance of profits for six months applicable for United States Steel Corporation securities | | $57,610.697 |
| Deduct: | | |
| Interest on United States Steel Corporation bonds for six months | $7.600,000 | |
| Sinking fund on United States Steel Corporation bonds for six months | 1,520,000 | |
| | | 9,120,000 |
| Balance | | $48,490,697 |
| Dividend for six months on stocks of United States Steel Corporation, viz.: | | |
| Preferred, 3½ per cent | $17,860,335 | |
| Common, 2 per cent | 10,166,633 | |
| Dividends on outstanding stocks of subsidiary companies | 106 | |
| | | 28.027,074 |
| Undivided profits for the six months applicable to increase "Depreciation and Reserve Fund" accounts, new construction or surplus | | $20,463,623 |

A comparative statement for the months of April, May and June, 1901 and 1902, shows:

| | 1901. | 1902. |
|---|---|---|
| April | $7,356.744 | $12.320.766 |
| May | 9,612.349 | 13.120,930 |
| June | 9,394.747 | 12.250,000 |
| Totals | $26,363,840 | $37,691,696 |

**United States Cast Iron Pipe & Foundry Company.**—The balance sheet as of May 31, 1902, compares with the balance sheet of January 1, 1902, as follows:

*Assets.*

| | May 31. | January 1. | Increase. |
|---|---|---|---|
| Cost of property and plants | $24,066,167 | $24.062.064 | $4,103 |
| Treasury stock | 347,555 | 347,555 | ..... |
| Unissued stock | ..... | 5,000,000 | *5,000,000 |
| First mortgage bonds, American Pipe & Foundry Company | 306,000 | ..... | 306,000 |
| Sinking fund | 49.377 | 49.377 | ..... |
| Accounts receivable | 2.332,127 | 1.579,229 | 752.688 |
| Materials | 1,238,372 | 1,421,060 | *182,688 |
| Cash | 179.814 | 237,786 | *57,972 |
| Totals | $28.519,412 | $32,697,071 | *$4,177,659 |

*Liabilities.*

| | | | |
|---|---|---|---|
| Preferred stock | $12,500,000 | $15,000.000 | *$2.500,000 |
| Common | 12,500,000 | 15,000,000 | *2,500,000 |
| First mortgage bonds, American Pipe & Foundry Company | 1.500,000 | 1.194,000 | 306,000 |
| Mortgage Anniston Foundry | 87,500 | 289.829 | *202,329 |
| Bills payable | 250,000 | ..... | 250,000 |
| Accounts payable | 720,000 | 543.002 | 176.998 |
| Reserve for working capital | 289.827 | ..... | 289.827 |
| Dividend | ..... | 125,000 | 125,000 |
| Surplus | 500,360 | 457.742 | 72,618 |

* Decrease.

Add—Profits for fiscal year ending May 31, 1902, after paying interest on floating indebtedness, but before allowance for depreciation, $901,949. Total, $1,402,309. Deduct —Improvements written off, $117,287; reserve for working capital, $289,826; interest on bonds and mortgage, $77,414; dividends paid, $246,063. Total, $730,592. Balance, $671,717. The following directors have been elected: Colgate Hoyt, Samuel Thomas, George B. Hayes, George J. Long, A. C. Overholt, C. E. Burke, E. R. Thomas, B. F. Overholt, A. F. Callahan, A. N. Brady, E. C. Fuller, P. J Goodhart, David Giles, W. T. C. Carpenter—the last three being new members of the board. The board organized by electing the following officials: President, George B. Hayes; first vice-president, George J. Long; second vice-president, A. F. Callahan; secretary and treasurer, B. F. Horton. Executive Committee, Colgate Hoyt, A. C. Overholt, E. R. Thomas and A. N. Brady.

**Harbeson-Walker Refractories Company.**—The Farmers' Deposit National Bank and the Colonial Trust Company of Pittsburgh are offering at 102½ and accrued interest $2,000,000 out of a total issue of $3,500,000 of first mortgage and collateral trust 5 per cent. 20-year gold bonds. An examination of the books of the constituent companies for two years has shown that they have made an annual profit of $806,572.11.

In the circular offering for subscription at par and accrued interest, $4,000,000 of the total authorized issue of $5,000,000 Clarion Steel Company 5 per cent. bonds, W. P. Snyder, president, estimates the net earnings of the Clarion Steel Company on present prices at $3,500,000 per annum. The stock of this company is owned by the Crucible Steel Company, and the same authority says that the earnings of the latter this year are at a greater rate than $300,000 a month.

**Dividends.**—Although the Colorado Fuel & Iron directors decided to pass the common dividend, they declared the regular semiannual dividend, 4 per cent., on the preferred.

The American Locomotive Company have declared a 1¾ per cent. regular quarterly dividend on preferred stock.

The Fore River Ship & Engine Company have declared a semiannual dividend of 3½ per cent. on the preferred stock, payable July 14 to stockholders of record July 10.

The United States Steel Corporation have declared the regular quarterly dividends of 1¾ per cent. on preferred stock and 1 per cent. on common stock. The preferred stock dividend is payable August 15. The books close July 18 and reopen August 16. The common stock dividend is payable September 30. The books close September 6 and reopen October 1.

The Washington Charcoal Iron Tin Mills, Washington, Pa., have declared the regular quarterly dividend of 3 per cent., payable July 1.

The directors of the Monongahela River Consolidated Coal & Coke Company of Pittsburgh, have declared a dividend of 3½ per cent. on the preferred stock, payable July 15.

The directors of the American Window Glass Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent. on the common stock payable July 15.

**Buffalo & Susquehanna Iron Company.**—A meeting for the arrangement of the final details was held yesterday at Buffalo, the following being elected officers of the Buffalo & Susquehanna Iron Company: President. W. A. Rogers; vice-presidents, C. W. Goodyear and F. H. Goodyear; secretary and treasurer, Wilson S. Bissell, former Postmaster-General; general manager, Hugh Kennedy. The company have purchased a fraction over 50 acres of ground at Stony Point, near Buffalo, adjoining the plant of the Lackawanna Steel Company. The board is now engaged in placing the contracts for the ore handling machinery. Other contracts will probably be placed at an early date. It is not likely that the furnace plant will be completed for two years.

At Pittsburgh a combination of natural gas companies involving several millions of dollars has been effected. The companies included in the combination are the Manufacturers' Light, Heat & Power Company and the Tri-State Gas Company, both of Pittsburgh; the Relief Natural Gas Company of Washington, Pa., and the Wetzel Natural Gas Company of West Virginia. By the deal the Tri-State Relief and Wetzel companies pass into control of the Manufacturers' Company, and the new concern will be known by the name of the latter corporation. The deal involves practically all the natural gas interests of Western Pennsylvania, outside of those controlled by the Philadelphia Company, and those of West Virginia and Southeastern Ohio. The new concern will control in the neighborhood of 400 producing wells and from 800 to 900 miles of pipe line. It will supply from 17,000 to 18,000 customers. The terms of the deal were not made public.

## Metal Market.

NEW YORK, July 2, 1902.

**Pig Tin.**—There has been a steady decline in prices since last week, owing to the lower quotations from London and the East. The unfavorable statistics made public yesterday had an immediate effect on the market, but to-day it more than recovered. Yesterday the market went as low as 27½c. for spot. At the close to-day spot was quoted 28c. to 28.10c. July was 27½c. bid, and offerings at 27¾c. August was 27¼c. bid, and 27.40c. asked. The London market lost 15 shillings since last week. To-day's latest cable named £124 15s. for spot, and £122 futures. Shipments from the Straits for the month of June were especially heavy, being 640 tons greater than at this time last year. The monthly statistics published on the New York Metal Exchange yesterday show that on June 30 the visible supply was 1131 tons greater than that at the same time last year. The statistics show:

| | Tons. |
|---|---|
| Total visible supply June 30, 1902 | 15,897 |
| Against visible supply May 31, 1902 | 17,018 |
| Against visible supply June 30, 1901 | 14,766 |

The semiannual Tin statistics, as compiled in gross tons by C. Meyer, secretary New York Metal Exchange, show:

Total shipment Straits to Europe and the United States for the six months ending June 30:

| 1902. | 1901. | 1900. | 1899. | 1898. |
|---|---|---|---|---|
| 26,259 | 24,421 | 21,994 | 22,250 | 22,440 |

DELIVERIES.

For the six months ending June 30:

| | 1902. | 1901. | 1900. | 1899. | 1898. |
|---|---|---|---|---|---|
| United States (exclusive Pacific ports) | 17,500 | 15,400 | 14,800 | 15,700 | 13,900 |
| London | 7,244 | 7,017 | 7,830 | 6,400 | 8,420 |
| Holland | 7,188 | 6,937 | 6,666 | 7,669 | 7,792 |
| | 31,932 | 29,354 | 29,296 | 29,769 | 30,112 |

VISIBLE SUPPLY.

| | | | | | |
|---|---|---|---|---|---|
| Total on June 30 | 15,897 | 14,766 | 15,192 | 18,768 | 23,515 |
| United States (exclusive of Pacific ports), June 30. | 6,694 | 5,654 | 4,220 | 5,188 | 5,949 |

QUOTATIONS ON JUNE 30.

| | 1902. | 1901. | 1900. | 1899. | 1898. |
|---|---|---|---|---|---|
| New York | 27.87½ | 27.95 | 31.75 | 26.82½ | 15.45 |
| London | £124 10s. | £128 10s. | £145 | £120 15s. | £70 15s. |
| Singapore, C. I. F. London | £121 10s. | £122 15s. | £134 | £121 | £71 10s. |
| Silver in London | 24¼d. | 27¼d. | 28¼d. | 27 11-16d. | 27½d. |

It will be observed that while the shipments, deliveries and visible supplies are considerably heavier than last year, the New York price is but a shade lower.

**Copper.**—To-day an upward movement was started which offset the declines of the last few days. The advance came by way of London, and American speculators and producers were quick to follow. Before this movement set in the London market had declined considerably and this market was extremely dull and soft. Prices throughout the week have been in buyer's favor. For spot and July, Lake was quoted this morning 12⅛c. to 12¼c. August, September and October were 12c. bid and 12¼c. asked. Electrolytic, spot, to September, was 11.90c. bid, 12.10c. asked. Casting, spot to October, was 11¾c. bid and 12c. asked. Standard was quoted on 'change, spot, to October, 11⅜c. to 11¾c. The London market came—Spot, £52 15s.; future, £53 2s. 6d., and Best Selected, £58. The total exportation for the month of June amounted to 12,560 tons, making the total exports since January 1, 93,943 tons, as against 49,325 tons of last year.

**Pig Lead**—Is without change, the market being quiet and uninteresting. The Smelting & Refining Company still quote Desilverized 4.12½c., spot, and 4.10c., 15 days, New York. The London market advanced a shade to £11 3s. 9d.

**Spelter.**—The market is especially firm. Prices are going right on up and there is considerable belief that the market is being manipulated by a large New York interest. It is said that up to 4.75c. the advance was quite natural and looked for, but beyond that figure prices are manipulated. At present spot is quoted 5⅛c., New York. At Pittsburg, Kan., they were quoting 5.05c. for Prime Western, and at the same time a choice brand could have been bought in New York at the same price. St. Louis quotes 4.85c. The demand is naturally very light. It is expected in the trade that the midsummer dullness is due to shutting down of plants for repairs. St. Louis quotes 4.85c. and the London price £18 15s.

**Antimony**—Is firm and unchanged. Hallett's is quoted at 8.37½c., and Cookson's remains unchanged at 10.25c.

**Nickel**—Is unchanged: ton lots are quoted at 50c.

**Quicksilver.**—Prices are on a basis of $48 per flask of 76½ lbs. in lots of 50 flasks or more.

**Tin Plates.**—The market is unchanged. The American Tin Plate Company are quoting for delivery until October 1 on a basis of $4.19 per box of standard 100-lb. Cokes, f.o.b. New York. or $4 f.o.b. Pittsburgh. Quotations from Swansea show a decline of 1½d. to 13s. 6d.

## The Virginia Furnaces.

The situation at some of the plants in Virginia, as the result of the strike of the coal miners in Virginia and West Virginia, is reflected in the following telegrams:

Princess Furnace, Glen Wilton, Va.: "Furnace banked on account of strike."

Pulaski Iron Company, Pulaski, Va.: "We blew out for 17 days on account of the coal strike. We blew in again on June 27."

Allegheny Ore & Iron Company, Clifton Forge, Va.: "Allegheny Furnace has been blown out. Big Ben Furnace at Shenadoah has been banked on account of shortage of coal caused by the strike in the West Virginia coal field."

New River Mineral Company, Ivanhoe, Va.: "The coal strike has not stopped us yet."

Graham Iron Company, Graham, Va.: "Our furnace is in full blast, making 1000 tons per week."

Virginia Iron, Coal & Coke Company, Bristol, Tenn.: "None of our furnaces have been banked on account of the coal strike."

Big Stone Gap Iron Company, Big Stone Gap, Va.: "Our furnace is still in blast."

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E. A. Muench of Philadelphia, who is connected with the American Bridge Company, is seriously ill. It is understood that Mr. Muench is to join forces with the parties who have purchased the plant of the Pottsville Iron & Steel Company, at Pottsville, Pa.

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William Runkle, president of the Warren Foundry & Machine Company of Easton, Pa., who has been ill of pneumonia at his home in Orange, N. J., is now recovering.

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The Proximity Mfg. Company, Greensboro, N. C., manufacturers of cotton goods, have purchased about 200 acres of land upon which they will erect one of the largest denim mills in the South. The plant will be known as the White Oak Cotton Mills and will consist of a main building about 150 x 750 feet, engine and boiler rooms, warehouses, office building, &c. Plans are not yet completed, but will be shortly, when it is probable the company will require a considerable amount of new machinery.

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The Youngstown Truss & Cable Fence Company who have taken over the Hornellsville Truss & Cable Fence Company of Hornellsville, N. Y., and will remove the plant to Youngstown, have opened offices in the Federal Building in that city, with W. W. Bonnell in charge.

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The recently organized Indianapolis Tin Company, Indianapolis, Ind., now have their tin can plant in running order. They have purchased adjacent property on which they propose building an extension to the present plant, to be used for the manufacture of lard and paint cans. This line, however, will not be taken up until the other lines are fully established.

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A company composed of Boston capitalists have secured large tin deposits in the vicinity of Cape York, which they are preparing to open up. It is their intention to erect smelters at Seattle, Wash. William M. Courtis, mining engineer and metallurgist, 412 Hammond Building, Detroit, Mich., is interested.

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The Born Steel Range Company, Cleveland, have purchased 3¾ acres adjoining their present plant in Brooklyn, near Cleveland, and they will make long contemplated improvements as soon as possible. A new building, 120 x 500 feet, will be erected on the land purchased. The company now employ more than 300 men and the addition will make it possible to increase this number to 500.

## The General Building & Construction Company.

The General Building & Construction Company is the style of a new corporation organized in New York with a nominal capital. It is proposed to increase the capitalization to $2,500,000, but this has not been done as yet. The new company propose entering the building field in large cities. The capital, it is said, may be further increased as needed, the shareholders at the time having the first right to subscribe for the new shares at par in proportion to their holdings. One of the parties interested stated to a representative of *The Iron Age* that the details of organization and financial arrangements have not been completed as yet. The list of directors, it is said, will probably include the following:

William F. Havemeyer, Cornelius Vanderbilt, Chas. T. Barney, president Knickerbocker Trust Company; Henry Seligman of J. & W. Seligman & Co., bankers; S. H. Chisholm, American Grass Twine Company; Wm. A. Garrigues, Levering & Garrigues, Architectural Iron Works, 552 East Twenty-third street, New York; Wm. J. Merritt, Alex. S. Porter, Boston; H. B. Cocheu, secretary; Wm. B. Randall (treasurer), trust officer of Knickerbocker Trust Company; F. H. Ecker, manager Real Estate Department, Metropolitan Life Insurance Company; Louis Dohme, Sharp & Dohme, drugs, Baltimore; Col. Chas. H. Ropes of H. L. Horton & Co., bankers; Chas. A. Cowen, mason and builder; John Larkin of Steadman & Larkin (counsel); Henry R. Hoyt of Daly, Hoyt & Mason.

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The controlling interest of the Niles & Scott Company of La Porte, Ind., represented by William Niles, E. H. Scott and Emmet Scott, has been sold to William E. Taylor of Cleveland and F. A. Turnbull of Chicago. Mr. Turnbull has been secretary of the company for the past 14 years and continues in the same capacity. Mr. Taylor was lately general manager of the Republic Iron & Steel Company and before that was connected with the American Steel Hoop Company, and previous to that was connected with several prominent firms. The Niles & Scott Company had undertaken the erection of a large new building before the recent transfer of stock, and had contracted for much new machinery, which will be delivered by the time the building is ready for its reception, so that by September 1 the capacity of the plant will be doubled. The business of the Niles & Scott Company since 1897 has been large and constantly increasing. The firm manufacture wood and metal wheels for agricultural implements. In their shop steel spokes are welded into steel hubs by electricity all at the one operation and quickly and thoroughly. This electric welding process has now been in use by the Niles & Scott Company more than ten years.

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President Isaac S. Boyd, Vice-President Ed. L. Humphreys, Secretary Frank M. Baisden of the Southern Saw Works of Atlanta, Ga., and others have organized the Barry Railway Gate & Appliance Company for the manufacture of an automatic railway crossing gate, the invention of M. C. Barry. The company have made practical tests with a gate set up in their yards, and claim that it can be operated easily at any distance by an approaching train.

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The trustees of the State Asylum for the Blind at Columbus, Ohio, will ask for bids on extensive improvements to the lighting, heating and plumbing systems of the institutions. Plans have been prepared by Stribling & Lum, architects. The improvements will cost about $36,000.

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Furnace A of the Tonawanda Iron & Steel Company, at North Tonawanda, N. Y., has been relined, and is expected to go into blast in a few days.

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The production of tin in the Federated Malay States was in 1900 and 1901, respectively: Peray, 355,589 and 385,066 piculs; Selangor, 269,490 and 302,598 piculs; Negri-Sembilan, 72,251 and 75,242 piculs, and Pahang, 12,728 and 22,084 piculs.

### The Pittsburgh Molders' Agreement.

At a meeting held in Pittsburgh last week, between Pittsburgh members of the National Founders' Association and representatives of the molders, a wage agreement, effective for one year, from July 1, was adopted as follows: This agreement entered into between a committee representing the I. M. U. N. A. members of Nos. 46, 243 and 270, and a committee representing the Frank-Kneeland Machine Company, Lincoln Foundry Company, Wm. Yagle & Co., Phillips & McLaren, Best Mfg. Company, Mesta Machine Company, Taylor, Wilson & Co., Jas. Rees & Son, Rosedale Foundry Company, Pittsburgh Steel Company, Hall Steam Pump Company, W. J. Early & Sons, Marshall Foundry Company, Union Steel Casting Company, Pittsburgh Mfg. Company, Porter & Co., Sterritt & Thomas, Union Foundry & Machine Company, Thos. Carlins' Sons, National Gear Wheel Company, Washington Foundry Company, G. A. Hogg Iron & Steel Company, A. Garrison Foundry Company, Chilled Roll Foundry Company, McIntosh, Hemphill & Co., Jelly & Co., Springfield Foundry Company, Columbia Iron & Steel Company and the Velte Foundry & Machine Company.

Witnesseth: That from and after July 1, 1902, until July 1, 1903, the advance of 20 cents per day be paid to each molder in the employ of the foundries represented at this conference, and to such molders as were employed at the beginning of the coremakers' strike, if such molders are re-employed.

That the minimum rate of wages remain at $3 per day for nine hours.

That overtime will be paid at the rate of time and half time for hours' work over 54 per week.

That double time will be paid for Sunday, Fourth of July, Labor Day, Thanksgiving and Christmas.

That both parties agree that it is to their mutual interest to see that fair dealing is the cardinal principle in our intercourse with each other; and that all disputes hereafter arising shall be settled in accordance with the New York agreement.

That this agreement shall be in force as between the parties represented hereby, for one year from July 1, 1902; and that provided any change is desired at the expiration of that time, notice be given on or before April 1 preceding the expiration of this contract, stating changes desired. If no notice is given the contract will be in force for one year.

Committee of I. M. U. N. A.: John Murto, John Barnett, John Flinn, Tim Kaye, E. J. Muehlman, Wm. Dolin, Ed. Rause.

Committee of Manufacturers: George Mesta, Jos. Fawell, Robt. Taylor, F. A. Campbell, Wm. Yagle, Augustus Trump, I. W. Frank.

### Shipbuilding Contracts on the Lakes.

Within the past week the American Shipbuilding Company of Cleveland have closed contracts for 16 large freight vessels, these being the largest contracts ever closed in the history of the great lakes during a similar period. Contracts for ten of the vessels were placed by A. B. Wolvin of Duluth, president of the Great Lakes & St. Lawrence Transportation Company, which will operate between the upper lakes and Quebec in connection with the company's docks and general plant in the latter city. The ten boats will be of Canadian canal size. They will be 242 feet keel, 43 feet beam, 26 feet deep. They will have triple expansion engines and one Scotch boiler each. The boats are to be completed and ready for business by next May.

The other contracts were closed by Capt. W. W. Brown of the United States Transportation Company. The contract approximates $1,300,000. The vessels will be of the most modern type of steel construction with the following dimensions: One steamer 434 feet long, 50 feet wide, 28 feet deep; one steamer 370 feet long, 48 feet wide and 28 feet deep; three steamers 400 feet long, 50 feet wide and 28 feet deep, and one steamer 400 feet over all, 380 feet keel, 50-foot beam and 28 feet deep. All of these boats will be fitted with Scotch boilers and Ellis & Eaves induced draft. The Cleveland Company now have under contract 20 steamers for next year's delivery, and the yards will have about all they can handle during the winter. It is stated that other parties are figuring on building, and that more orders may be placed during the next few weeks.

## PERSONAL.

V. E. Edwards, mechanical engineer of the Morgan Construction Company of Worcester, Mass., sailed on the 24th ult. on a short vacation trip to London and Duesseldorf.

George B. Hayes has been elected president of the United States Cast Iron Pipe & Foundry Company to succeed Samuel Thomas, who has resigned owing to ill health. Mr. Hayes has been the practical head of the company for some time past.

H. V. De Hart succeeds F. A. Burr as assistant to S. W. Baldwin, sales agent at New York of the Pennsylvania and Maryland steel companies.

Leonard C. Hanna of the firm of M. A. Hanna & Co., Cleveland, Ohio, has gone on an extended trip to Europe.

G. P. Altenberg, foreign manager of the J. A. Fay & Egan Company of 179 to 199 West Front street, Cincinnati, Ohio, makers of wood working machinery, has just left for his annual trip to Europe, where he will visit the principal countries in the interest of his firm. He will also go to South Africa, where he will organize agencies and representatives. The address of Mr. Altenberg while in Europe will be 51 Wharton road, Kensington, London, W., England.

Henry R. Stadtmiller has been appointed superintendent of the machinery department of Blake & Johnson of Waterbury, Conn.

J. Taylor Boyd, for years superintendent for the Cornwall Ore Banks Company, Limited, has resigned and is now treasurer of the company, with offices at Lebanon. His place has been filled by the appointment of J. B. Shilling, lately of Duluth, Minn., where he was connected with ore mining for a number of years.

Among those who recently sailed for Europe was Frank Samuel of Philadelphia.

Percival Roberts, Jr., of Philadelphia authorizes a denial of the rumors connecting his name with the undertaking to start the plant of the Pottsville Iron & Steel Company. He states that he has no interest in it whatever.

W. Hamilton Brunt has been appointed assistant cashier of the Pittsburgh Coal Company, at Pittsburgh.

Theodore F. Patterson, for many years manager of the Safe Harbor Rolling Mill, Lancaster County, Pa., and more recently in charge of the Graham Furnace, Virginia, is now connected with E. B. Leaf & Co., specialists in high grade scrap material, whose offices are in the Real Estate Trust Company's Building, Philadelphia.

James B. Myers, sales agent of Spang, Chalfant & Co., Incorporated, announces that he has retired from their employ and that until further advised his address will be at the Duquesne Club, Pittsburgh.

James Gayley, first vice-president of the United States Steel Corporation, has been elected a member of the Executive Committee.

Circumstances so fortunate attended the accident to Walter Scranton, president of the Lackawanna Steel Company, that he was able to take up business in New York on Tuesday. Although Mr. Scranton's nose was broken he shows but slight indications of it now.

Under the title "Top or Bottom—Which?" Archer Brown of Rogers, Brown & Co., New York, has issued for private circulation a neatly printed pamphlet addressed to boys. It is a "study of the factors which most contribute to the success of young men," and is dedicated to his sons, Archer and Lowell. There are interesting introductions contributed by Bishop Charles H. Fowler, Hamilton W. Mabie, Irving Bacheller, Andrew Carnegie and James B. Angell, president of Michigan University.

# OBITUARY.

PROF. JOHN B. JOHNSON.

Prof. John B. Johnson, dean of the College of Engineering of the University of Wisconsin, Madison, Wis., and one of the foremost engineering experts of the country, was killed on June 23 by a carriage accident at his summer home at Pier Cove, Mich. He was born at Marlboro, Ohio, in 1851, and was graduated from the University of Michigan in 1878. In 1881 he became professor of civil engineering at Washington University, St. Louis, Mo., which position he filled for 18 years, until elected to be the head of the College of Engineering at the University of Wisconsin. He built up the department remarkably, and was instrumental in erecting a $100,000 engineering building with an equipment costing $40,000. Professor Johnson was a member of the American Society of Civil Engineers, the American Association for the Advancement of Science and the Society for the Promotion of Engineering Education. He was at one time president of the St. Louis Engineers' Club, and was the author of a number of standard engineering text-books and many scientific papers in the field of engineering.

NOTES.

WILLIAM SWINDELL of William Swindell & Brothers, engineers and contractors, at Pittsburgh, and one of the best known furnace builders in the country, died suddenly of heart failure at his residence in Allegheny, Pa., last week. He was born in Pittsburgh, February 15, 1834, and had long been prominently identified with the business development of Pittsburgh. He was the inventor of numerous improvements for regenerative gas furnaces and gas producers, and altogether had taken out 85 patents on as many inventions. He was among the first builders at Pittsburgh in the early days of steel works as an agent for Siemens & Co. of England, and during the Civil War had charge of the furnace equipment of the Fort Pitt Foundry, where many of the large cannon used by the Northern army were made.

MAJOR JOHN J. REBMAN, superintendent of the plant of the Pittsburgh Steel Company, at Glassport, Pa., was killed by being struck by a train last week. Major Rebman was born at Chambersburg, Pa., in 1843, and for a number of years was manager of the Cherry Valley Iron Works, at Leetonia, Ohio, and later became superintendent of the Pittsburgh Steel Company at Glassport.

ADAM LAYTHEM, proprietor of the Eagle Brass & Iron Foundry of Passaic, N. J., died on June 21 at his home in that city, aged 61 years. Mr. Laythem also established the North Passaic Iron Foundry, and was connected with the E. C. Hay Foundry at Newark, and the Newark Iron Foundry. He was born in Manchester, England, and came from a family of iron founders, both his grandfather and his father having been proprietors of foundries. His sons will continue the Passaic business.

ROBERT B. LYLE, who died in St. Louis, Mo., June 17, was prominent in railroad and manufacturing circles. Entering the service of the old Atlantic & Pacific Railroad in 1871 as a boy, he was advanced step by step, until in 1882 he was made general purchasing agent of the entire Gould Southwestern system, when it comprised 10,000 miles of road. He left the service in 1886 to accept the position of general agent of the Missouri Car & Foundry Company. Subsequently he managed the Southwestern interests of the Black Diamond Steel Works of Pittsburgh, the Springfield Iron Company and latterly the Illinois Steel Company. He leaves a widow, a son and a daughter.

GEORGE W. BROWN of the Case Mfg. Company of Columbus, Ohio, and president of the Columbus Metal Trades Association, died in Columbus on June 11.

NORMAN S. BRYAN, president of the Bryan Foundry Company, and of the Indianapolis Chair Company, died on June 16, at Indianapolis, Ind., aged 71 years.

CHARLES T. CHILD, technical editor of the *Electrical Review*, died June 23, at the age of 35 years, at Gleasondale, Mass., of typhoid fever. Mr. Child was a widely known writer on electrical and scientific subjects. He became an electrical engineer of high standing at an early age and was the assistant of Frank J. Sprague in building in 1887 the first electric railway in the United States, at Richmond, Va., which city was his birthplace.

CHARLES B. SANFORD, head of the spring department of the Washburn & Moen department of the American Steel & Wire Company, died very suddenly at his home in Worcester, Mass., Saturday morning, June 14. He was 35 years old. Mr. Sanford was born in Worcester and in 1886 began his business career with the Morgan Spring Company. In 1892 he went to the Washburn & Moen Mfg. Company to organize and superintend their wire spring department, then about to be established. He remained in that position ever since, and the growth of his department from a small beginning to one of the principal departments of the Washburn & Moen works has been largely due to his energy and business ability. Mr. Sanford was president at the time of his death of the Worcester Commercial Travelers' Association. He leaves a widow and two children.

W. EDGERTON of the Victorian Iron Rolling Mills, West Melbourne, Australia, died early in May at the age of 73. He it was who rolled the first bar of iron made in Australia in 1860, and he was consequently regarded as the pioneer of the industry. The Victorian Iron Rolling Mills, of which he was for many years managing director, were built up under his guidance.

MAJOR IRA A. SHALER, a well-known civil engineer, died in the Presbyterian Hospital, New York, on June 29, as the result of injuries received on June 17 in the section of the new subway in New York City, for which he was the subcontractor. Major Shaler was one of the most prominent of the younger civil engineers of New York. He was born in Ridgefield, N. J., 40 years ago, and was a graduate of Cornell University. During the Spanish-American war he served as Major of the First United States Volunteer Engineers through the campaign in Porto Rico. He was a member of the American Society of Engineers.

ROBERT MCLAUGHLIN of the firm of Colket & McLaughlin, proprietors of the North American Smelting Company of Philadelphia, died Monday, June 30, at his residence in that city. The cause of death was acute Bright's disease. Mr. McLaughlin was in his sixty-eighth year. He came from Ireland when 15 years old, and made Philadelphia his home. In 1865 he and G. H. Colket formed the firm of Colket & McLaughlin.

DAVID R. MORSE of the firm of Howard & Morse, manufacturers of wire goods and ventilating apparatus, at 45 Fulton street, New York, died on June 28 at his residence in Brooklyn, N. Y. He was born at New Market, N. J., 67 years ago.

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**The Pittsburgh Shear, Knife & Machine Company.**—PITTSBURGH, PA., July 2, 1902.—The Pittsburgh Shear, Knife & Machine Company of Pittsburgh, builders of steel hammers and shear knives, have refused to recognize the Machinists' Union and some of the machinists have quit work. The question at issue between the firm and the men is not one of wages, but simply the refusal of the concern to recognize the union. The firm expect to have their full complement of machinists, 50 in number, at work within a week.

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The Ferguson Tin Plate Company of Pittsburgh have made application for a charter. The new concern will take over the business of the Ferguson Tin Plate Company, Limited, operating a dipping plant at East Liberty, Pittsburgh, with a capacity of 500 boxes 20 x 28 inch terne plates per week.

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The strike of metal polishers, buffers, platers and brass workers, which has been on in Cleveland for the past two months, has been declared off and the men returned to work on Monday of this week. The men struck for a nine-hour day and an increase in pay. By the terms of the agreement they will receive a nine-hour day or a 54-hour week, but the rate per hour remains as heretofore. The strike has been a bitter one and in several of the shops the men were enjoined from interfering with imported nonunion men. A large sum was paid out in strike benefits by the Polishers' Union.

# HARDWARE.

THE increase in the number of Hardware jobbing houses is one of the marked features of the trade during recent years. While there has been the disappearance of many prominent concerns, there has been the coming into the field of many minor houses whose business is on the whole exceedingly desirable, and who are accordingly eagerly sought as customers by the manufacturers. Fifteen years ago, or even as late as ten years back, there was a comparatively limited number of recognized wholesale houses demanding jobbing discounts by reason of their position, irrespective of the quantity bought, and holding the trade of the country in their hands. One of the many influences which have contributed to this result is the fact that in connection with the formation of manufacturing combinations there was the adoption of quantity basis on many articles, with the extreme quantity discount set at so low a limit as to be within the reach of many merchants, which encouraged them to buy direct from the manufacturers. Personal associations of great value to the jobber were thus sundered. Old relations were ignored in an effort to get the business upon a better basis, and little sentiment in the dealings between jobber and manufacturer survived. There was at the same time substantial progress made toward direct relations with manufacturers by many houses with whom the retail end of their business was often the more important. The effect of this in increasing the number of jobbing houses is obvious.

Some interesting facts are brought out in connection with statistics furnished by the Census Bureau in regard to the Bicycle and Tricycle industry, from 1890 to 1900, as referred to at length in another column. At the beginning of the decade this business was in its infancy, there being 27 factories in the country, a third of which were in New England and the same proportion in the Central States. In 1900, while the number in New England had been increased to 55, this, with the progress elsewhere, was only about a sixth of the entire number. The Western movement of the industry is shown by the figures in regard to the Central States, in which during the period under review the number of factories had increased from nine to 152, or nearly a half of the number in the country. In other words, the New England and the Central States each started the decade with a third of the manufacturers, while New England closed it with a sixth, and the Central States with nearly a half. In 1890 the capital invested in New England was about 60 per cent. of the total, while in 1900 it was less than 25 per cent., and the Central States had increased from less than 40 per cent. to nearly 60 per cent. While the manufacture of Bicycles, which had its tremendous boom and collapse during this period, may not be taken as a typical industry, the facts in regard to it are suggestive as illustrating among other things the Western movement of manufacturing enterprise.

## Condition of Trade.

The last half of the year opens with a very general feeling of confidence that the remaining six months will be characterized by excellent business. All classes in the trade have gratifying reports to make in regard to results of the past six months, which have been undoubtedly a period of exceptional prosperity both in the making and marketing of goods, as well as throughout the country as large. There is general agreement in the feeling that there is still a large volume of business awaiting the trade during the remainder of the year. The strength of the iron market gives firmness to prices, but the heavy demands upon manufacturers have perhaps nearly as much influence in this direction. At the present time there is difficulty in obtaining goods in many lines which is without parallel in recent years. Prominent manufacturers who have usually been in a position to fill orders promptly are months behind. Not only in heavy goods, but in many other lines, such as Shovels, Tools, Builders' Hardware, miscellaneous specialties and various kinds of Shelf Hardware, is there delay in executing orders. With the excellent promise for business in the fall there is some prospect that in many lines it will be a question as to obtaining goods rather than of prices, and merchants who take this view are covering their requirements liberally. In this condition of things prices are naturally steady, and apart from the increased cost of goods on account of the prices of the raw material and the higher wages which are ruling, manufacturers are indisposed to make concessions. In a few lines, however, the effect of competition is developing slightly lower prices, but on the whole the situation is very satisfactory.

### Chicago.

*(By Telegraph.)*

There has been a decided falling off in the number of orders received during the past week by local jobbers of Hardware. The mail has been burdened with numerous complaints and excuses in which the weather and rain have had the lion's share of comment; otherwise there has been but little change in the character of the trade. The general opinion seems to prevail that the cold, wet weather experienced through most of the month of June will materially reduce the returns to be received from the various crops in the West, and hence has discouraged the placing of orders which could be deferred. A few weeks of dry, warm weather, however, will materially brighten prospects. It should be noted, too, that this is the usual time for a falling off in business and the decrease should therefore have less weight. It is notable, also, that among retailers the past few days have brought an increased activity rather than otherwise, and probably another week will bring jobbers under its influence. With the exception of Sheet Zinc, which has been advanced ½ cent by manufacturers, there have been few changes of importance in prices during the last week of June. Nails and Wire and such other staple articles have been very quiet. The demand for Heavy Hardware has been less affected by the weather and the less favorable crop outlook than Shelf Hardware, and quite liberal orders have been received for Bars, Angles and Channels, Agricultural and Wagon Steel, and full prices have continued to be obtained on all lines. Builders' Hardware is selling less rapidly and contractors believe that there will be a decided falling off in the number of buildings constructed during the fall, basing this opinion on the fact that labor is being paid much higher wages than usual, while prices of all building material, as Lumber and Cement, as well as Iron and Steel, are higher. As far as the city is concerned, there is certainly a falling off of permits issued, and in the country the high prices prevailing for labor more than any other one thing is discouraging new building. This, of course, will not have its effect on Builders' Hardware for the present; manufacturers of this class of Hardware are so far behind in filling orders that the outlook for decreased business so far away has little effect. It is probable that the lapse of a month or two will bring about a decided change in the tone of this department. Wire and Nail mills are closing for repairs, and this will continue throughout most of the summer, with gradual resumption.

### St. Louis.

*(By Telegraph.)*

The trend of affairs and volume of movement of goods in the Hardware market are in line with recent reports, and every indication points to the most favorable future conditions of trade anticipated by the jobbing interests in this country. No possible complaint can now be offered because of the lack of rain; in fact, the very liberal recent supply has been injurious to some sections, but it is thought when the full and complete returns of damage are in that losses will not foot up as heavy as first reports would indicate. Indications of expanded trade conditions are not alone confined to the Hardware market, but one has only to look up the midyear dividend distributions of the financial and industrial corporations of St. Louis to form an idea of the growing importance of this business center. The financial institutions lead in the matter of profits to their stockholders, but other interests in the industrial and railroad world are well up in the list of profitable investments.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—We have now reached a season of the year when we must look for diminished trade for at least the first half of the month of July, which is usually the case each year. The clerical force in installments are now taking their vacations. Those remaining are attending to the receipt of orders and getting the stock in condition for the fall campaign. Many of the salesmen are off on vacations and a general quiet will reign.

The coal strike throughout our State calls for greater anxiety we feel than at any time since it was inaugurated. The bitter feeling on the part of the miners has become intensified and is growing, and there is a difference of opinion whether the strike will extend over the entire mining sections as the result or decision of the meeting on July 17.

The trade located in the manufacturing districts are quite familiar with the fact that uneasiness exists on the part of the workmen in manufacturing establishments, which is incidental to and always accompanies general prosperity. The various unions of workmen, all who have any knowledge of them will admit, have their grievances, but at the same time owners and those who have their money invested are conducting their business frequently with great uncertainty from the fact that they may have a general strike throughout the establishment if they discharge a man for incompetency or dishonesty, which will result in closing the whole factory unless that man is reinstated, which we all admit is a hardship.

The feeling throughout the mining district has become very much intensified, and while it looked two weeks ago as if the matter would be settled the uncertainty to-day is greater. In the meantime throughout that entire district general quiet remains, and much suffering must exist. We hope for a speedy settlement of the difficult problem.

### Cleveland.

THE W. BINGHAM COMPANY.—Business in the Hardware line in this section continues running along in good shape and a large volume is still coming our way. The continued rains that we have had in this section have made a large demand for Lawn Mowers, Grass Hooks and Scythes, and the demand for general line of Hardware and Milling Supplies is very good indeed. The continued strike in the hard coal region affects our trade somewhat, but the trade in the soft coal region has not been affected very much as yet, and it is hoped that the labor troubles in this section will be settled without a strike. The manufacturers throughout this district all seem to be busy and there is no perceptible let up in their demand for supplies. On the whole, Hardware business in this section is quite satisfactory.

We are receiving many mail orders for Wire and Nails for shipment from Cleveland mills and from stock, and an unusually large number of orders for Barbed Fencing for this time of the year, showing that a large amount of fence building is going on among the farmers.

Prices of all kinds of goods remain steady and even, and this makes trade quite satisfactory. Collections are quite good.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—There is nothing particularly new to report on the Hardware situation in this locality. The jobbers are doing the usual amount of business for this season of the year. Considerable construction work is going on. A number of buildings are being erected in this city and surrounding country. In addition to this more railroad building is being done in middle Tennessee and this county than for the past 25 years. The Tennessee Central Railroad has just been completed into this city, and is now operating freight and passenger trains daily between Nashville and Harriman, Tenn. The contracts have just been let to extend this new railroad from Nashville to Clarksville, and from there to a point in West Tennessee connecting with the Illinois Central. This is to be completed within ten months, so that in that time there will be an entire new railroad system running lengthwise through the entire State from the Mississippi River on the West to the seaboard connections on the East. This new railroad opens up a wonderfully fine undeveloped country and will be a vast benefit to the city of Nashville.

The salesmen for the jobbing houses usually begin their regular fall trips about July 1, and the prospects are very bright for good trade during the summer and fall. Collections are also most satisfactory.

### San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—Trade still continues good, especially in the agricultural line, which is now at its hight, and of which there is a vast amount. The wheat crop is very fair and the irrigated districts enjoy the largest yields known for years. The yield of fruit this year will be enormous unless something unforeseen happens, and the grape crop will be unusually heavy. Taking it altogether, the farmers' crops and the extensive building now going on, the merchants will have no cause for complaint this year.

There are no changes to report except a scarcity of building material, and demands for all classes of Hardware seem to exceed the supply. Farmers and lumbermen are doing well, and their movements all over the Coast are causing Hardwaremen to feel that this year is to be one of the prosperous years.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of June closes with trade conditions practically unchanged. Jobbers are well satisfied with the amount of business doing. Advices from traveling representatives, and reports by visiting merchants who have been present in the market during the month, all tend to substantiate the statement that the country tributary is in a very prosperous condition, and as a very large yield of small grains is assured, together with flattering prospects for a heavy corn harvest, it is confidently predicted that the record of the volume of business for the latter six months of the year will prove to be a record breaker.

From whatever point the situation may be viewed, the most gratifying evidences are apparent, while the prospects for the future are full of promise.

## NOTES ON PRICES

**Wire Nails.**—The demand for Wire Nails is moderate, and distribution on contracts expiring July 1 has ceased. Requirements of the trade for the next 60 days will be comparatively light. Mills are closing for repairs, thus reducing the output. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| To jobbers in carload lots | $2.05 |
| To jobbers in less than carload lots | 2.10 |
| To retailers in carload lots | 2.10 |
| To retailers in less than carload lots | 2.20 |

*New York.*—Small lots of Wire Nails from store are in good demand. Quotations remain unchanged, as follows: Small lots from store, $2.30; carloads on dock, $2.18 to $2.20.

*Chicago, by Telegraph.*—There has been a further falling off in the demand for Wire Nails, but this is usually anticipated at this season and is of little significance. Some mills have already shut down and others are closed for repairs, and this conditfon will probably continue throughout the month. There is no disposition to court trade at the expense of prices, and the market remains steady, with single carloads selling at $2.20, and small lots from $2.25 to $2.30 from store.

*Pittsburgh.*—Demand for Wire Nails continues very quiet and some of the mills are rapidly accumulating stocks. Quite a number of the mills have closed to make necessary repairs and take inventory, and this will take a good deal of product out of the market this month. Prices continue fairly firm. We quote Wire Nails at $2.05 in carloads, f.o.b. maker's mill.

*St. Louis, by Telegraph.*—A fair demand continues for Wire Nails in this market, and for the same period of other seasons a favorable comparison can be made. Quotations are unchanged and carload lots are named at $2.25 and small lots from stock at $2.30.

**Cut Nails.**—Prices of Cut Nails ruling in June were reaffirmed for the month of July by the Cut Nail Association at a recent meeting. The material falling off of demand at this season will afford some relief from the delays in obtaining both Steel and Iron Nails. Manufacturers find it difficult to obtain material from which to manufacture them, especially iron. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

| | |
|---|---|
| Carload lots | $2.05 |
| Less than carload lots | 2.10 |

*New York.*—Cut Nails are in fair demand in the local market at unchanged prices. Quotations for carloads and less than carloads are as follows:

| | |
|---|---|
| Carloads on dock | $2.18 |
| Less than carloads on dock | 2.23 |
| Small lots from store | 2.30 |

*Chicago, by Telegraph.*—The inquiry for Cut Nails is less urgent, but there is little increase in supply. The market remains firm at $2.30 for small lots from store.

*Pittsburgh.*—Demand has quieted down a good deal and the mills are making quicker shipments than for some time. Iron Cut Nails continue very scarce and bring a premium in price over Steel Cut Nails, which we quote at $2.05, base, in carloads and $2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination, terms 60 days, less 2 per cent. off in 10 days.

*St. Louis, by Telegraph.*—A fair demand continues for Cut Nails, while in the matter of prices no change is to be noted. Quotation of $2.40 continues for small lots from stock.

**Barb Wire.**—Orders for Barb Wire are, for the most part, confined to small lots. There are reports of some irregularity in price. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| To jobbers in carload lots | $2.60 | $2.90 |
| To jobbers in less than carloads | 2.65 | 2.95 |
| To retailers in carload lots | 2.70 | 3.00 |
| To retailers in less than carloads | 2.80 | 3.10 |

*Chicago, by Telegraph.*—The call for Barb Wire has about receded to the usual proportions experienced during the summer months, but there is no disposition to change prices. The market remains firm for Galvanized at $3.10 and Painted at $2.80 in carload lots, with 5 cents extra for small quantities.

*Pittsburgh.*—Demand is dull and it is intimated some of the mills are making slight concessions in prices on attractive orders. However, the tone of the market is fairly firm. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, $2.60; Galvanized, $2.90; less than carload lots, Painted, $2.65; Galvanized, $2.95.

*St. Louis, by Telegraph.*—The volume of demand for Barb Wire continues favorable along the same lines as noted in our last report. In the matter of price no change is heard, and Painted is quoted at $2.90 and Galvanized at $3.20.

**Plain Wire.**—The Plain Wire market continues without change. Orders are light and mills are engaged in filling contract orders. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. for cash in 10 days:

| Base sizes. | Plain. | Galv. |
|---|---|---|
| To jobbers in carload lots | $2.00 | $2.40 |
| To jobbers in less than carload lots | 2.05 | 2.45 |
| To retailers in carload lots | 2.05 | 2.45 |
| To retailers in less than carload lots | 2.15 | 2.60 |

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 to 9 | Base | | | | | $0.40 | extra |
| 10 | $0.05 | advance | over | base | | .40 | " |
| 11 | .10 | " | " | " | | .40 | " |
| 12 and 12½ | .15 | " | " | " | | .40 | " |
| 13 | .25 | " | " | " | | .40 | " |
| 14 | .35 | " | " | " | | .40 | " |
| 15 | .45 | " | " | " | | .75 | " |
| 16 | .55 | " | " | " | | .75 | " |
| 17 | .70 | " | " | " | | 1.00 | " |
| 18 | .85 | " | " | " | | 1.00 | " |

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

*Chicago, by Telegraph.*—New orders for Plain Wire received are of the usual character of the summer business, but the market has remained steady, sales being made at $2.20 for jobbing lots from store.

*Pittsburgh.*—The market is without special feature. Demand is quiet, as it always is at this season of the year, and some of the mills are accumulating stocks. The tone of the market is not as firm as it has been. We quote Plain Wire at $2 and Galvanized at $2.40 in carload lots, f.o.b. Pittsburgh. Slight advances are charged for small lots.

*St. Louis, by Telegraph.*—No. 9 Plain Wire is quoted at $2.25, and Galvanized at $2.65. The volume of demand is referred to by the jobbing trade as being of fair proportions.

**Sheet Zinc.**—Under date, June 24, Matthiessen & Hegeler Zinc Company, La Salle, Ill., announce the base price of Sheet Zinc as $6.50 per 100 pounds, delivered, f.o.b. cars, La Salle, in 600-pound casks. The following discounts are also announced:

| | Cash with order. Per cent. | Quantity. Per cent. | Total. Per cent. |
|---|---|---|---|
| Carload lots | 3 | 5 | 8 |
| 9000-pound lots | 3 | 3 | 6 |
| 6000-pound lots | 3 | 2 | 5 |
| 3000-pound lots | 3 | 1 | 4 |
| Less than 3000 pounds | 3 | 0 | 3 |

**Lamp Wicks.**—Manufacturers of Lamp Wicks have adopted uniform discounts on Regular, Special and Stove and Heater Wicks. The list on Regular Wicks is known as List No. 1; on Special Wicks, as List No. 2, and on Stove and Heater Wicks, as List No. 3. Discounts are as follows:

| | Discount. |
|---|---|
| List No. 1 | 70 and 5 % |
| Lists Nos. 2 and 3 | 10 and 5 % |

List No. 1 is as follows:

*List No. 1.*

| | Per gross. |
|---|---|
| No. O, or E, ½ inch wide | $0.60 |
| No. 1, or A, ⅝ inch wide | .75 |
| No. 2, or B, 1 inch wide | 1.10 |
| No. 3, or D, 1½ inches wide | 1.75 |
| Brilliant, Argand and Crystal Light | 2.00 |
| Deitz, ¾ inch wide | .90 |
| B. Wick, Double Thick | 2.50 |
| Above Wick in 32-yard pieces at same prices. | |
| Pett Circular | .60 |
| No. 3, Moehring, 2¾ inches wide | 3.00 |
| Mann's Monarch | 2.50 |
| D. Dual, 10 inches long | 3.00 |
| Duplex and Oxford, 10 inches long | 3.00 |
| Wide-Awake and Nutmeg | .50 |
| Tom Thumb, Round and Flat | .30 |
| Nos. 1 and 2, German Student | 1.10 |
| Little Banner, Favorite and Evening Star | .30 |
| Round Fluid, per dozen | 60 cents. |

List No. 2 pertains to such Wicks as are used on Rochester, Miller and other lamps of that type. List No. 3 relates to Flat and Round, Stove and Heater Wicks. As all manufacturers do not make Wicks for the same lamps, stoves and heaters, Lists 2 and 3 are not altogether uniform, but all No. 2 and 3 lists are subject to the same discounts as given above.

**Steam, Gas and Water Brass Work.**—As a result of the meeting of the Brass Manufacturers' Association at Niagara Falls, which began on June 23, an equalization of prices on Brass Work for Steam, Gas and Water was effected, with a slight incidental advance. It is understood that a more radical advance was advocated by the Western members of the association, but that the condition of the Brass market in the East was such that the Eastern members did not advocate a large advance. Flange and Thimble Competition work was also restored to the list of goods quoted by the association, and new prices will be announced. For some time past this class of work has not been quoted by the association, as many concerns who have been making a specialty of this line were not members of the association. Several of the outside concerns have stopped manufacturing Flange and Thimble work, owing to the lack of demand, which has been brought about by the dullness of trade in the metropolitan district. In consequence of the withdrawal of the outside competition from the market these goods will be quoted by the association.

**Wire Rope.**—A reduction in the price of Wire Rope has been made by the manufacturers. The present discount on Galvanized Wire Rope is 40 and 5 per cent. to the trade and 40 and 2½ per cent. to consumers. On Rope not galvanized the discount is 45 and 5 per cent. to the trade and 45 and 2½ per cent. to consumers. The Galvanized Strand list is subject to a discount to dealers of 30 and 5 per cent. for Single, and 25 and 5 per cent. for Double Galvanized. Terms 60 days, less 2 per cent. for cash in 10 days.

**Post Hole Diggers.**—Somewhat higher prices are announced by the manufacturers of the Eureka pattern, Hercules pattern and Vaughan pattern Post Hole Diggers. The manufacturers, who are working together with a good degree of harmony, report a large volume of business and a satisfactory outlook.

**Bifurcated and Tubular Rivets.**—The manufacturers of Bifurcated and Tubular Rivets announce a reduction in price of these goods, which is understood to be owing to the development of competition.

**Sash Weights.**—Going into effect July 1 the price of Sash Weights for the Eastern district is made $22.50 to $23 per ton, f.o.b. foundry. It is not unlikely that a similar advance will be made in the West, but we are not in receipt of advices in regard to it.

**Tinware.**—The manufacturers of Tinned, Stamped, Pieced, and Japanned Ware have readjusted some of their prices on a comparatively few lines of leading goods. The changes are principally in the line of reductions, although there are a few increases in price. The reductions will vary between 5 and 10 per cent., and are mainly on account of some increased competition among smaller manufacturers of competitive goods. It is in no sense a general revision of prices, although the goods affected are thoroughly staple.

**Binder Twine.**—Quotations on Binder Twine have been advanced by large Western manufacturers. Before the recent storms there was a difference of opinion with regard to the supply of Twine compared with the prospective demand. Some estimated that there was sufficient Twine for all requirements, while others looked for a shortage. The damage done to wheat and corn by the storms in the Western, and some of the Middle States is reported as being very discouraging. Quotations are not uniform with all manufacturers, ranging for small lots, with ¼-cent rebate for carload lots, f.o.b. Eastern mills, as follows:

| | Per pound. |
|---|---|
| Sisal | 12 to 12¼c. |
| Standard | 12 to 12¼c. |
| Manila | 15 to 16¼c. |
| Pure Manila | 17½ to 18c. |

**Glass.**—All Window Glass factories are now reported as being out of operation. There is said to be considerably less Glass in manufacturers' and jobbers' hands than there usually is at this season, so as stocks become depleted in assortment higher prices may be expected for popular sizes. The result of the final test of the Glass machines is reported as indicating a distinct commercial success. The Jobbers' Association quotations are as follows:

| | Discount. |
|---|---|
| From store, single and double strength | 88 and 5 % |
| F.o.b. factory, carload lots: | |
| Single and double strength | 89 and 5 % |

**Paints and Colors.**—*Leads.*—The demand for White Lead in Oil shows a falling off, as the trade are pretty well supplied. Manufacturers are now busy preparing for trade in the fall. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds, 6½ cents per pound.

**Oils.**—*Linseed Oil.*—Demand for Linseed Oil for immediate delivery is of a hand to mouth character. There is also little interest taken in placing contracts for large lots of Oil for future delivery. Quotations, according to quantity, are as follows: City Raw, 67 to 68 cents; out of town Raw, 66 to 68 cents per gallon.

**Spirits Turpentine.**—The falling off in the prices of Turpentine during the middle of the week revived interest in the market, which had been dull at previous figures. Buying was in more liberal quantities, at the following quotations, according to quantity: Southerns, 47½ to 48 cents; machine made barrels, 48 to 48½ cents per gallon.

## U. T. HUNGERFORD BRASS & COPPER COMPANY.

U. T. HUNGERFORD BRASS & COPPER COMPANY, 121 Worth street, New York, owing to encroachments by the Rapid Transit Commission, who are about to locate a subway station on a portion of the property at the above address, and the increasing demands of their business, have been compelled to seek larger quarters. They are now about to move into a fine large building about completed, known as the Hallenbeck Building, at the corner of Pearl and Park streets, 100 feet east of Centre street, a ten-story building covering a site nearly 100 feet square. The company occupy the basement, street floor and first floor above the street. There is also a new building now under way adjoining this structure, facing Park street, of which they will have the first three corresponding floors, giving them a total of about 30,000 square feet of floor space.

In the basement of the Hallenbeck Building, which is finely lighted from natural as well as artificial sources, they will carry Heavy Case Goods, Ammunition and all reserve stock in boxes. The street floor has been systematically arranged to carry, in a comprehensive way, immense stocks of Staple Brass, Copper and kindred goods. In one large room will be an adequate stock of Rivets and Burs, Sheet Brass and Brass and Copper Wire in bundles, the shelving being of North Carolina pine. One large rack has been constructed to hold about 100,000 pounds of Brass and Copper Rods. The rack for brazed tubing has a capacity of about 50,000 pounds. The rack for Seamless Brass and Copper Tubing includes also Brass, Tinned and Nickel Plated Tubing in iron pipe sizes, with another rack to carry 50,000 pounds of Seamless Copper Tubing for coppersmith use, with overhead facilities for carrying Copper Tubing for the same class of trade, in lengths of 20 feet, which are extra long.

The upper of the three floors is being fitted up for office and counting room purposes. Here also will be located their sample and show rooms. They have ample elevator service, both passenger and freight, and the various modern conveniences now only possessed by up to date business structures.

Their largely increased facilities, close proximity to the business centers and shipping accommodations make possible the carrying of even greater stocks than heretofore and the prompt shipping of orders.

## DEATH OF DAVID R. MORSE.

DAVID RANDOLPH MORSE died at his home in Brooklyn, N. Y., Saturday, June 28, of Bright's disease after a short illness. He was in New York the preceding Thursday with his son, Frederick, and apparently was in his usual good health, barring a slight indisposition caused by indigestion. He retired rather earlier Thursday night than usual on that account, and early Friday morning the family found him critically ill. Although everything was done to save his life, the end came Saturday afternoon, he being conscious almost to the last, passing away peacefully and quietly.

Mr. Morse retired from the firm of Howard & Morse April 1, 1902, their business being the manufacture of a high grade Wire Cloth of different metals and kindred Wire Goods with a large factory in Brooklyn and offices at 45 Fulton street, New York.

Mr. Morse was born in New Market, N. J., March 31, 1835, and was educated at New Hampton, N. H. As a young man he was in the employ of G. De Witt & Bro., now De Witt Wire Cloth Company, when their offices

DAVID R. MORSE.

were at John and Gold streets, New York, part of the time as their cashier. May 1, 1862, he, with John W. Howard, who died about ten years ago, formed a copartnership under the title of Howard & Morse, Mr. Howard, an expert and thorough Wire worker, looking after the manufacturing part of the business, while Mr. Morse financed it and supervised the marketing of the product.

Mr. Morse was one of the oldest and ablest Wire Cloth manufacturers in the United States. He has always been active in whatever concerned the Wire Goods trade. To his efforts largely was due the organization of the Wire Cloth Manufacturers' Association, of which he was the president, and which in the opinion of some members of the trade has had a good influence in the direction of regulating prices and establishing uniform trade lists in what was formerly a tangle of schedules.

When the Manufacturers' Association of Kings and Queens counties (now the Manufacturers' Association of New York) was organized about eight years ago, he was one of its most energetic and prominent members. He was also a director and vice-president of the City Savings Bank, Brooklyn, and had been a trustee of the Washington Avenue Baptist Church in Brooklyn for over 25 years, seldom missing a service if in the city. He was also one of the earliest members of the Oxford Club, Brooklyn, a leading social organization, of which he was serving his third term as vice-president when he died. In November, 1866, Mr. Morse was married to M. Amelia Randolph, who, with several grown children, survive him.

D. R. Morse was of a bright, cheerful and engaging personality and the possessor of much creative force. One of his intimate associates, himself the head of a prominent New York business house, says of him, "He was a man beloved by every one; a good friend and good citizen; the kind of man right minded people liked to associate with; sincere, high toned and a man of his word."

## HARDWARE TRADE CLOSING MOVEMENT.

THE agitation begun a few days ago looking to the closing of the New York houses in the Hardware, Cutlery, Gun, Ammunition and Sporting Goods and related lines, from Thursday night, July 3, until Monday morning, July 7, appears to be almost universal, the few exceptions being mainly those who expressed themselves as glad to join if the movement included representative houses (who have since decided to close). It is also understood that a number of other substantial concerns will close, whom, for want of time, it was not possible to see.

A hurried random canvass of the most accessible houses on Chambers, Reade and Warren streets, who have definitely signified their determination to close, are as follows: Russell & Erwin Mfg. Company, Reading Hardware Company, P. & F. Corbin, Allerton-Clarke Company, Yale & Towne Mfg. Company, Corbin Cabinet Lock Company, John H. Graham & Co., Stanley Works, Stanley Rule & Level Company, J. Stevens Arms & Tool Company, Peters Cartridge Company, Tower & Lyon Company, Charles Parker Company, Harmon & Dixon, Whitman & Barnes, Cleveland Twist Drill Company, Standard Tool Company, E. C. Atkins & Co., W. & J. Tiebout, Topping Brothers, J. C. McCarty & Co., Goodell Company, R. Heinisch's Sons Company, Humason & Beckley Mfg. Company, R. Christensen, Meriden Cutlery Company, Patterson, Harral & Gray, American Wringer Company, W. B. Fox & Brother, W. H. Jacobus, G. I. Mix & Co., W. R. McCullough, Bridgeport Brass Company, Greene, Tweed & Co., J. Curley & Bro., Neal & Brinker, De Witt Wire Cloth Company, U. T. Hungerford Brass & Copper Company, C. B. Barker & Co., C. E. Miller, B. F. Goodrich Company, Hartford Rubber Works Company, C. A. Baynon Company, Underhill, Clinch & Co., Sickels & Nutting Company, Smith, Lyon & Field, Livingston Nail Company, M. Hartley Company, Remington Arms Company, Union Metallic Cartridge Company, Bridgeport Gun Implement Company, Winchester Repeating Arms Company, Schoverling, Daly & Gales, A. G. Spalding & Bros., R. & D. Folsom Arms Company, Peck, Stow & Wilcox Company, Voight, Starr & Co., George B. Curtiss, J. G. Smith & Co., Alfred H. Smith, and a number of the other well known Gun, Ammunition and Sporting Goods houses, together with the offices of *The Iron Age*.

A. E. DUNCAN has been appointed manager of the store of Stanley Works, 79 Chambers street, New York. Mr. Duncan has been with the company for about 20 years, and for a number of years had a close and confidential relationship with Mr. McCartee, who was in charge of the office, and is thus entirely familiar with its duties. This promotion and mark of confidence on the part of the company will be regarded with satisfaction by his many friends in the trade, by whom Mr. Duncan is held in high esteem.

THE baseball teams of the New York houses of Russell & Erwin Mfg. Company and Sargent & Co. played a match game on Saturday, 28th ult. Russell & Erwin's team won by a score of 26 to 16.

Drennan Hardware Company have succeeded Drennan-Briggs Hardware Company, 325 and 327 West Fayette street, Syracuse, N. Y., wholesale and retail dealers in Heavy Hardware and Wagon Makers' and Blacksmiths' Supplies.

# SPECIAL BRANDS.

## Views of Manufacturers and Merchants.

IN view of the importance of the subject we give the following communications which have come to us from parties who represent the three great classes of the trade, Manufacturers who produce the goods, jobbers whose private marks they bear, and merchants who come into immediate contact with the consumers.

### I.—THE ARGUMENT FOR SPECIAL BRANDS.

#### Jobbers' Special Brands.

BY A. W. DOUGLAS, SECRETARY SIMMONS HARDWARE COMPANY.

"*The recollection of quality remains long after the price is forgotten.*"

Any discussion of the value of jobbers' special brands must first take into account the question of merit, as this is the underlying basis of any permanent success in this line. It is the neglect of this principle that has confused the matter in the minds of those not fully acquainted with the facts, so that they have comprehended the sheep alike with the goats in their condemnation.

Those jobbers who have been shortsighted enough to think that the essence of a special brand consisted merely in a name and in a new label, and were content to send out second quality goods under the firm's name guarantee of excellence, have only themselves to blame if both the manufacturers from whom they buy, and the retailer to whom they sell, have no longer any patience with the deception. Nor must manufacturers forget that they have allowed themselves, against their better judgment, to be persuaded to accept orders for small lots of goods, usually of second grade, under the jobbers' special brand, in order to keep the good will of some small jobber, when in the nature of the case it was impossible to furnish first-class goods under such conditions.

To the jobber, however, who had faith and "sand" enough to build for the future, there has come a natural reward in the way of a reputation and a standing that is more potent in a matter of this kind than whole reams of argument. It may not be amiss to note in passing that a certain brand of goods has attained such a reputation for excellence and unvarying merit, that manufacturers have themselves sought to advertise the fact that they were makers of the brand in question.

The reason of this is that it is generally recognized all over the country that this certain brand referred to is, invariably, the first quality, the very best that money and skill can produce, and that this brand never appears on anything which has its superior in the market, and, consequently, the thoroughness and care with which the point of quality in this special brand is watched and guarded, is the best evidence that the manufacturer who makes these goods does so because he has demonstrated beyond any question that his goods, in point of quality and finish, are the very best to be had.

The story of a special brand such as this is that the jobber, from the beginning, has been willing to pay a fair price for the goods and has always made the question of the purchase price subordinate to that of merit. Nor has he made the fatal mistake of changing from one manufacturer to another, on a question of price only, realizing that a lower price is pretty sure to be expressed in the quality of the goods.

Such a jobber as this enjoys in some respects an advantage over the manufacturer in a maintenance of quality in his own special brand. While he changes from one manufacturer to another but rarely, yet there are times when such a change is both necessary and beneficial to preserve the quality of the goods.

Those who have watched the progress of factory brands realize how often it is true, as stated by Mark Twain, "That it is well not to be the 'best' man, since there is always a 'better' man coming along to wrest away the title." Factory brands deteriorate from a variety of reasons. The manufacturer goes into a combination and loses his individuality—the personality of the concern changes and with it the policy alters—the manufacturer becomes shortsighted and trades on the reputation of his brand, some other maker comes along who has a new invention, or improved methods, or better machinery, or more brains.

In such cases the life and reputation of the factory brand fades away in a comparatively short time, while the jobber is not the permanent victim of such conditions. He transfers the making of his brand to the new and successful maker, thus getting the benefit of every advance and every improvement. He has, moreover, the advantage of his own close inspection in addition to that exercised at the factory. He is constantly making tests of the goods and he enjoys the inestimable advantage of being much nearer—through the medium of his large traveling force—to the actual user than is the factory. He gets ideas in this manner from practical men and embodies them in his own brands for his own exclusive benefit.

It may be interesting to some to know that many of the striking points in some special brands—in appearance, methods of packing and utility—have been suggested by the users of the goods to the retail merchants, from whom they were purchased and by him to the jobbers' representatives, whom he meets regularly and with whom he is usually in close touch.

To such an extent is this true of a certain well-known brand that manufacturers to whom it is a large and increasing part of their product, give it their best efforts, even more than to their own brand, for, paradoxically enough, they are not beset by competition and the temptation to cheapen the product as much in the special brand as they are on their goods.

It is obvious that manufacturers will, naturally, be desirous of making a brand that has an established trade and is a synonym for excellence, for it is just that much additional business that they could not secure in any other way. Not only this, but it is a business which, if properly taken care of, has an element of permanence and satisfaction not to be found in any other way.

In this case the manufacturer, who has, as a rule, a comparatively small line to protect, in fact in a great many cases only one article, and while this of course is his all, still he does not go to the extreme that the jobber does in his regard for his special brands, the reason being that the jobber has a complete line of tools, the aggregate sale of which amounts to a great many hundreds of thousands of dollars, and any deterioration in the quality of any one of these articles naturally jeopardizes the trade on the whole line and reflects on the reputation of the entire brand. This reputation, therefore, of the jobbers' special brand is of greater value in proportion to the extent of the line, as proportionately more care and thoroughness in the inspection and watchfulness and proportionate certainty of the quality being maintained.

So far as the relations between Hardware manufacturers and jobbers regarding special brands are concerned the analogy can be found in other branches of business as an accepted fact, with the difference as to more harmony in some respects in the Hardware business as in some other lines the jobbers have themselves gone into the manufacture of their own brands.

It does not follow that the competition between manufacturers is the incentive toward their making jobbers' brands, for it is a matter of record that one of the large consolidations practically controlling their line of business continues to make special brands under conditions that have standardized them and much raised the grade on the average.

Again let it be said, that in any fair discussion of this question there can be no defense for those inferior goods which masquerade under special names as being articles of high quality. In the long run they can bring only trouble to those who make them, those who sell them and those who use them.

This, of course, is a question entirely apart from those brands—each the best of its class—which are sold

for what they are in their own grade—as is a common practice with both manufacturer and jobber.

So far as the retailer is concerned the advantages to him in handling jobbers' brands are both numerous and obvious, provided always he confines himself to brands of approved merit and excellence, as we shall show in detail.

In the beginning the retailer handling jobbers' special brands has an entirely harmonious line of many items, notably in Edged Tools, of equal merit throughout and alike in method of packing, labels and general appearance, in a way that cannot be obtained when buying the different items from many manufacturers.

A striking instance of this is found in the case of a large distributing house abroad, who found it desirable to have a line of American Tools, and after very careful consideration and personal examination selected a well-known brand of a certain American jobber, because only in this way could a complete, harmonious and homogeneous line be procured.

Should the question of claims or the matter of guarantee arise the adjustment is, naturally, much simpler and easier with the jobber or his salesman than with the manufacturer. He has also a line of goods in which he practically has no competition, for his competitor handles a different special brand, and he is enabled to make a satisfactory price on them, which is not the case with the factory brands, which every one of his competitors handles, and the profit on which is consequently much cut. He can carry a much smaller stock than with factory brands, for he can order in small quantities and still keep his assortment complete, which is not possible when orders go to many sources instead.

The value of a small but complete stock to the retailer and the advantage that he enjoys by being able to constantly replenish his stock at short intervals from the jobber is one that deserves from the retailer the most careful consideration. In dealing with the jobber who has a large and complete stock the retailer does not have to invest a lot of idle money in stock which does not move rapidly and freely. He does not have to buy quantities in order to obtain the prices, and lose in interest on money invested more than any possible difference in price. He is able to do his business on a much smaller capital than otherwise, or to do a much larger business and make considerably more money with the same capital by practically making the jobber carry his stock for him, which is an advantage that cannot be obtained by the retailer who buys direct from the manufacturer.

He has a line which his worst enemy—the catalogue house—cannot obtain from large jobbers, who make a point of thus protecting their trade, as is not the case with many factory brands. When he has established a trade on the brand he can feel sure of protection at the hands of the jobber, who will not permit any dealer to demoralize prices on his brand.

The retailer can thus feel perfect confidence in establishing a business on the jobbers' special brand, with the feeling that it cannot be harmed by the catalogue house, who is unable to get the goods in question, and the retailer can, therefore, always depend upon getting a good price for the goods, because the quality and reputation have been earned, provided he is always careful in his selection of his special brand, which is invariably first quality in every respect. He thus works up a business on this special brand, so that users demand these particular goods and will "take no other."

It is evident enough that the retailer has all along realized the benefit to him of jobbers' special brands, or he would not have bought and sold them for so many years.

One of the strongest arguments in this direction is a letter recently received by a prominent jobbing house from one of their good customers, which speaks for itself; and, in fact, embodies the whole thing in a nutshell.

*Gentlemen:* It affords me great pleasure to have the opportunity to write you this letter, believing it is due you, as I herewith express my sentiments in reference to your special brand of goods.

At this age and time they are surely the life savers of the retail Hardware merchant, owing to the fact that the retail Hardwareman is harassed every day by being compelled to meet the competition of the catalogue houses on staple brands of goods, which afford him only a meager profit. Since handling your special brands I have been placed in a position to get away from this illegitimate and unhealthy competition by handling and selling as far as possible your special brands. Since handling and pushing them I have built up a handsome trade on them, and to-day I notice that my trade, instead of asking for staple brands with catalogue house prices, are asking for your special brands, which, I assure you, afford me a far better profit, and furthermore, are giving the very best of satisfaction.

Before closing this letter I wish to inform you that I have nicknamed your specialties "Trade Getters" and "Money Makers." Very truly yours,

G. R. F. & CO.

The discussion of this theme is a timely one, since it will bring before the manufacturers the fact that any evil in the special brand matter lies in the abuse and not in its use. A. W. D.

## II.—MERCHANTS' ARGUMENTS AGAINST SPECIAL BRANDS.

### The Making and Selling of Special Brands of Hardware.

BY H. C. W.

Is it profitable to the manufacturers; is it profitable to the retailer? The question has been asked and argued and answered in a way over and over again, and is still an open one, as it will be so long as the representative of the jobber is instructed to push the sale of private or special brands.

The jobber gave the subject life, and the jobber keeps the brand or brands burning. He is responsible for many disappointments among retailers in having given up reputable and well-known goods for the sole purpose of putting in time and energy at building a reputation for goods utterly without value. The distinguishing private mark in 99 cases out of 100 is there for no other purpose than to secure a higher price and better profit for the goods.

FROM ANY STANDPOINT.

The subject does not seem to be a fair one in its results to either the maker of the goods or the merchant to whom belongs the distribution of them. The writer is not a sufferer in any sense from the use or abuse of special labels, having been persuaded into their use but possibly two or three times in a selling experience of 20 years, and at that time rather to secure variety than brands or price. But he has made it a point to make inquiry on the subject throughout one of the best Hardware States in the Union—among the cleverest buyers in the business, in Hardware associations and wherever opportunity offered—and in no case where the experience has been one to justify an opinion has he found the buying of special brands in favor. There may be and there are arguments brought up in its favor, but those in opposition are overwhelming.

WHY HARDWARE AND NOT OTHER LINES?

And it seems to be confined largely to the Hardware trade. It is seldom, if ever, you see the manufacturer of silks, muslins or dress goods throwing aside those brands on which they have made their reputation for a generation to substitute a special one for the distributor. Even a child is familiar enough with many of these brands to go to their retailer for purchases. With your grocer, your haberdasher, gentlemen's furnisher, clothier, &c., very little of this feature applies, and the brands you have known for years you ask for and get.

The originator of trade-marks and brands gives his best brain work to the production and upbuilding of the goods themselves, and, as very aptly expressed in *The Iron Age* of June 5, the better years of his life are given, perhaps at no profit, to making the line a worthy one, that the after years may bring the profit and the satisfaction of knowing that all the world is familiar with both goods and brand. This is his compensation and he is certainly entitled to it.

NEVER OF REAL TRADE BENEFIT

are these changes from old, reliable brands to the jobbers' "specials" and we all realize it sooner or later.

We frequently are to thank the clever salesman for being led into it, and almost before the goods are in the house are ready to repudiate the purchase.

We don't always and forever buy of the same jobber, and with the first change are out both the one special brand and the old, reliable goods we once carried. If some one else did the work of introducing the special there would be some little recompense for the change, but all that labor is also a part of the purchase price; and you must not only lose the old brand that sells at sight, but put your time and energy into explaining to the customer why the new is better than the old—and for the paltry reason always given that "the special is as good and costs less."

COMMON SENSE SHOULD CORRECT

what is fast becoming a growing evil in the sacrifice of old and known brands for unknown. Common sense should teach us that no jobber has any other object than that of more profit in the goods sold; that it is not in the nature of a man to buy and promote special brands at the same profit as well-known goods, when the latter are always sold with half the effort. The manufacturer feels he has to cater to jobber, and the retailer buys because the goods exist and he is persuaded. We all know the pleasure of seeing a good tool—a Saw or Hatchet, a Brace, Plane or Square—of thoroughly reputable make, and whose warrant applies if the goods go wrong. Your own reputation, too, goes with a sale of this kind, and you risk it badly with any other, I care not what jobber is back of it. Then it isn't always at hand as to just who made the "special" you are selling—as a rule they bear neither the maker nor seller's name—and the loss comes from your pocket if your warrant is worth anything.

WHOSE GOODS ARE YOU BUYING

when you buy special brands? It may be a fairly good line one time, perhaps a second time, if the jobber has them made twice alike and by the same party. Perhaps the last manufacturer lost money on the contract and refuses to again supply at the same price. The goods must be made—the special brand is out—and some other manufacturer takes the risk of losing. In any case, as a rule these contracts for specials are sent all over the country for bids, and it's anybody's goods rather than the old, reliable ones you once carried and on which you were building your reputation.

DOES IT PAY

to buy anything but the best? Doesn't the best always have a reputation and a brand, based on years of hard, high priced and skilled labor? Isn't it a reputation and a name we are all endeavoring to make in our business? Isn't it better to support and make every effort to buy the brands of those makers who give their every hour's work toward supplying goods known the world over? Isn't it better to demand of your jobber those lines you sell without effort? Won't the temporary small profit more than offset the time you give to introducing the jobbers' special brands? Can you afford to have the difference in value in the goods put on your shoulders? Can you afford to sell goods whose makers you know nothing of and of whose quality you are always in doubt?

If supporting the maker of branded goods—goods we know all about—will tend to correct what will one day be an evil in the trade, then the time has come to do this. It will go a long way toward helping us out on the catalogue house problem, and a longer way toward solving the tale of racket, variety and 5 and 10 cent stores. It's a good time to ask the jobber to serve us as he once served us—give us goods we know and can stand back of. There have been times when we could not do it so well as now, and I believe the years will tell us we are better off in avoiding the sale of "special brands."

### The Absence of the Manufacturer's Name.

FROM AN INDIANA HOUSE.

Noting your comments in *The Iron Age* of June 5 on special brands for the jobbing trade, we heartily indorse everything you say regarding special brands. Would like to give you our opinion in addition thereto.

We believe there was a time when dealers, both wholesale and retail, looked upon the manufacturer's brand as a guarantee of quality, and indeed the strongest argument that the salesman could advance was that the article was made by such and such a manufacturer of great reputation. But it seems that of late years, and especially at the present time, the jobbers and large retailers to a large degree think that their special brands will grow in reputation and will some day be established as brands; that they will not only make greater profit upon the articles, but that they will have an established business on their respective brands.

This might be true if the contract were placed year by year with the same manufacturer and the same quality of goods produced. But it is just as you say in your editorial, these jobbers and large retailers peddle their specifications among the various manufacturers and the one who names the lowest price is likely to secure the contract.

The fact of the matter is that we know to our positive knowledge where certain jobbers have done this very thing, and when prices have advanced beyond a certain point they have asked the manufacturer to reduce the quality, but to continue the same brand. We do not say that all jobbers do this, but unscrupulous ones are doing it. Of course this works to their disadvantage in the long run, and we believe that it is working to the advantage of the manufacturer who puts out goods under his own brand and holds up the quality or improves upon it.

We do not buy goods from any manufacturer or agent or jobber who puts them out under special brands. We want the name of the manufacturer on the article and want to hold him responsible for the quality. This has been and shall continue to be our position toward special brands.

## III. — MANUFACTURERS' ARGUMENTS AGAINST SPECIAL BRANDS.

### The Paternity of the Goods Should Be Known.

We, years ago, took ground against substituting, on first-quality goods, any other name for our own. The manufacturer who strives to make high quality goods and takes pride in their reputation must always feel that it is an injustice to him to leave off his own name and put on another.

Not only this, there is in so doing an element of untruthfulness and therefore unfair dealing all around. As the manufacturer is entitled to have his name on the goods, so are the retailers, and on some lines the consumers, entitled to know whose goods they are buying. As the special brand goods are put out the name they bear is a cover, if not a deceit, and hence the practice is demoralizing. The tendency, as you state, is to make the manufacturer indifferent as to the strict maintenance of high quality.

We think the manufacturers should insist on the use of their own name on first-quality goods, and that the buyers should insist on knowing the paternity of the goods they buy. The retailers and customers will never know for a certainty what they are getting until the parentage of the article is honestly and squarely set forth. Especially is this true of the products of steel where the quality cannot be determined by the eye.

### Special Brands Are of Doubtful Quality.

Except on extraordinary conditions, which we cannot now imagine, we think the manufacturer is extremely shortsighted who puts out his first-quality goods without his name on. Good will is a valuable asset for a retailer; still more so for a jobber, and more than that for the manufacturer, and when the manufacturer furnishes his goods to the trade and leaves off his name he is losing an opportunity; and, in fact, wasting it. We took a stand a great many years ago that we would not leave our name off our first-quality goods, nor put our name on second-quality goods.

So far as we have had an opportunity to observe in buying at retail, goods having the name of the merchant instead of the manufacturer are doubtful in quality. Even though the jobber may try to exact high grade

from the manufacturer, he does not always get it, for in his efforts to get low prices he shifts about and takes up with a manufacturer whose standard of quality is low. The jobber markets the goods at an extra profit, but the consumer suffers.

### From a Well-known New England Manufacturer.

Your article on page 56 of *The Iron Age*, June 5, hits the nail on the head, and expresses practically just what we feel on the subject. We think it a great mistake for any manufacturers who have a record for the best Tools to stamp a jobber's brand alone on Tools. We have always refused in the past to make a special brand for a jobber, although we have been asked by some of our largest customers. We do not see any objection to stamping a jobber's special mark, if at the same time the manufacturer's name also appears.

### Paying for the Jobbers' Advertising.

In common with all other manufacturers we have packed goods under special brand and label when ordered in sufficient quantity. But we are always careful not to let our characteristics appear in any way. We claim that our trade name, our label and even our colors and methods of packing stand for the highest integrity in manufacture, and we suffer no one else to profit by them. We believe that such a name, in which the buying public have confidence, is one of our best assets, and we believe further that a better price can be obtained for products behind which there is a name or a trade-mark upon which buyers have come to look as a synonym of high merit.

There is one statement in the article in *The Iron Age* which experience has shown us is subject to qualification. "If the goods are superior the jobber who controls the trade-mark reaps the advantage." If for any reason they are inferior the jobber retires behind the statement that the goods "were made for them" by ——.

This also brings up another point. The special brand is only another means of compelling the manufacturer to pay for whatever advertising the jobber does. The jobbers are not advertisers at their own account. In the United States there are some 400 odd wholesale Hardware dealers. How many of them pay you for space? But they make the manufacturer create a demand at his own expense, of which they reap the benefit.

We would like to see the practice eliminated and the jobbers compelled to pay their own advertising bills.

### Their Name Their Trade-Mark.

We have found an exceptional value in the appearance of our name upon the goods of our manufacture, through the adherence to a firm policy of putting our name upon all goods made by us. Our name has become our trade-mark and is recognized pretty generally at home and abroad as giving character and individuality to the goods of our class. Especially is this true where a large line of goods is made by one manufacturer, the line appealing to one class of consumers. Satisfactory experience using one article will naturally have its influence when the user desires to purchase other articles.

We look upon our trade-mark as possessing an unknown but nevertheless tangible value, and in consequence we could not easily be induced to change our policy.

### A Very Poor Policy.

We agree substantially with what you have said in your article in regard to special brands, and will add that we think it very poor policy for any manufacturer making meritorious goods to establish a reputation for them under any other brand but his own. We think this special brand business has been done to death, and we have absolutely discouraged it in our line.

### The Special Brand a Menace.

Your article in *The Iron Age* in regard to special brands receives our unqualified indorsement. This is an evil that has been constantly growing from year to year until it has become a menace to the most reputable manufacturers.

### The Unenviable Position of the Special Brand Manufacturer.

The policy of this company has always been to absolutely refuse to manufacture any goods with any name on the same excepting that of this company, believing that each tool made by this company is an advertisement of the quality of their manufactured product, whether good or bad, and that it is exceedingly unwise for manufacturers to place goods on the market under any name but their own. We believe this is not the universal practice in this line of business. If a manufacturer sends out goods without his name upon them and they prove to be first class in every respect, he is losing all the reputation which he might otherwise acquire and is not known by a great many of his customers; and if at any time the parties for whom he has been manufacturing goods and who have used their own name or brand or trade-mark on his product stop buying of him he is without a list of customers, and it would be equivalent to starting in business all over again to attempt to build up and establish himself, whereas if he had always placed his own name on his manufactured goods he would be independent of any number of customers and could market his goods on their reputation, in spite of very decided efforts of either his competitors or his erstwhile customers to prevent it.

### Special Brands Not Advantageous for the Jobber.

We agree with what is said in *The Iron Age*, June 5, on special brands. Further, the article is extremely well written as from the manufacturers' view point, our own especially, as for years we have had no end of trouble along these lines, and out of our experience we say that in every point made in said article the nail has been squarely hit on the head.

While there can be no doubt about special brands put on regular goods being a burden on the manufacturer, especially where the regular brand is a trade-mark, like our ————, for instance, we go further and say that, in our opinion, the jobber who handles specials is being hit full harder than the manufacturer.

Take an article like the one just referred to, which is so well and favorably known the world over, one selling without question and without talk, the jobber with the special brand is much more than likely to lose an order which his competitor, selling the regular thing, is sure to get, for no matter how high the reputation of the first may be, the retailer knows he does not manufacture the article in question and prefers to take his chances with his regular brand; and from our past experience we do not for a moment hesitate to say that we are confident that the jobber who stands by the regular brand and sells goods under their legitimate brand or label is "it" in the long run. To sum up, special brands are an unmitigated nuisance.

## THE BLISH, MIZE & SILLIMAN HARDWARE COMPANY'S CATALOGUE.

THE BLISH, MIZE & SILLIMAN HARDWARE COMPANY, Atchison, Kan., have just issued a catalogue containing 1160 pages, representing the goods that they carry in stock. An alphabetical index occupying 34 pages is followed by a list of departments, into which the extensive line of goods represented by the catalogue is divided as follows:

Mechanics' Tools.
Locks and Builders' Hardware.
Paints, Oils, Varnishes, Paint Brushes and Glaziers' Sundries.
Farming Tools and Miscellaneous Hardware; Harness, Saddlery and Trimmings.
House Furnishing Goods.
Enameled Iron Ware, Pieced Tin Ware, Stamped Tin Ware, Japanned Ware, Galvanized Iron Ware, Tinners' Trimmings, Tools and Metals.
Cutlery, Nickel and Silver Plated Ware.
Guns and Sporting Goods.

We are advised that this is the first general Hardware catalogue issued by a Kansas firm, and also that it is the largest ever gotten out in that State. The catalogue is fully illustrated, quite a number of the illustrations being in color. The book is well arranged and

nicely printed, with sufficient space given to illustrations, descriptions and list prices to avoid any suggestion of crowding. H. B. Mize was the compiler and editor of the catalogue, which is bound in green cloth with white lettering. The company are to be complimented upon their enterprise in getting out this creditable catalogue, which will be greatly appreciated by their customers.

## THE WORK OF THE AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION.

ADDRESS OF FAYETTE R. PLUMB, PRESIDENT, AT THE ATLANTIC CITY CONVENTION.

I TAKE great pleasure in extending cordial greetings and a kindly welcome to this city by the sea, known far and wide as the greatest health resort on the Continent. I therefore hope that its life giving properties will be absorbed by each one of you, and after a pleasant sojourn here you may return home greatly benefited by this little outing and that you will be in a position to take up your work with an increased vigor and with kind remembrance of our association and the friends you have met with; also that our action here may be of such a favorable nature that it may induce you to come to our first annual meeting, to be held in New Orleans in November next, prepared to assist those in authority in making our association one of the most successful business organizations in our country.

While I feel greatly complimented for the honor you have conferred in electing me as your first president, and am greatly encouraged in making our association a success because of the intelligent and able Executive Committee that is associated with me in its management, I recognize the difficulties that confront me in making it what it should be, but hope and believe with your assistance that we shall soon assume our proper place before the world.

When our association was formed in Cleveland in October last it consisted of less than 70 members; this has been increased through the able efforts of the chairman of the Executive Committee and your worthy secretary to 145. Too much cannot be said in praise of our secretary, who has worked intelligently in season and out of season to promote our interests. We now have enrolled as members a majority of the leading manufacturers of Hardware in the United States. If you will scan this list closely I am positive you will join with me in saying that we occupy such a commanding position before the Hardware trade that we are able to take the lead in any industrial reformation we may think it wise to enforce.

In my inaugural address I referred to some of the abuses which have crept into the trade owing to excessive competition, and invited you to consider them carefully and be prepared to discuss them at this meeting.

I have thought it proper to again refer to them, as I am deeply interested in the eradication of these evils. The subjects referred to were "Contracts," "Cash Discounts" and "Special Brands."

Contracts between manufacturers and jobbers are generally considered by the latter as mere options, to be taken or not as their interests may demand. That the manufacturer is to blame, in part, for such a condition of things is, I think, unquestioned, and there is no class of trade, in my opinion, that is more open to general reform in this instance than our own, and I hope we shall take such measures in the future that will prevent such an interpretation.

Several of our manufacturers are greatly interested in adopting some plan that will eradicate the use of special brands. One of the most prominent makers of tools in this country, whose trade not only includes every city on this continent, but every important market throughout the entire world, and who is one of those who originally suggested the formation of this association, is greatly interested in this subject. It might be well to say for the information of those who are not familiar with this topic that this evil has become so universal that not only the jobbers but the large retailers are asking for special marks to distinguish their goods. Some of the jobbers are encouraging them in this by submitting their requests to the manufacturers. Orders of this character not only add very materially to the cost of production, but work great disadvantage to the manufacturers by lessening the sale of their own brands. This applies particularly to the manufacturers who devote their life's work to making first-class articles, and who are thus establishing a reputation for their own brands that will enable them to leave to posterity a prosperous and lucrative business. A recent article in *The Iron Age*, written by the Hardware Editor, is so entirely in accord with my own views on this subject that I have thought it well to quote from it. He says in part:

"The practice of making special brands for the jobbing trade is one which manufacturers generally regret, and to which they give their adhesion only under the pressure of what they deem a necessary compliance with the wishes of their wholesale customers. Under a normal condition of things the manufacturer should get the benefit of reputation which goods of real excellence may command from the trade in view of their quality. A manufacturer, even though he has put into the goods all the excellence of which his factory is capable, gains no reputation throughout the trade or with the public. The fact, indeed, that his factory has produced the goods is usually kept by the jobber a profound secret, and very properly so. It is obvious that this state of things cannot be pleasing to the manufacturers, who put forth their best efforts in producing goods of high grade, the sale of which under their own brand would give them reputation."

The subject of cash discounts was taken up by the chairman of the Executive Committee and the secretary, who communicated with each one of you personally, and I hope with satisfactory results. From what I can gather from some of the members with whom I have discussed it, I am confident that the result of our efforts in this direction has not been in vain. The general terms adopted by the Hardware manufacturers are 60 days net or 2 per cent. cash 10 days. This is, therefore a heavy premium to offer for prepayment unless the conditions of sale are promptly complied with, especially in view of the fact that the jobbers of Hardware are exceptionally good credit and there is naturally very little risk assumed in the extension of time.

The old saying that "In union there is strength" has been fully illustrated by the action of the National Hardware Association and the Southern Hardware Jobbers' Association, which are now in session in this city. It has occurred to me that we might go a little further than these organizations by forming separate sections to cover the different classes of trade represented in our association, and, for the purpose of furthering this suggestion, that a committee might be appointed to act for the different branches and that the members of this committee be selected as chairmen of the several interests. I do not go so far at this time as to advocate the adoption of uniform prices. There are, however, grievances in all lines of business that can be corrected with concerted action, and we all know by personal experience that we are warranted in getting together to correct such evils.

This first meeting after our organization is a sort of an introduction to our annual meeting in November next; in fact, we might consider it a preparatory school for the more advanced work which awaits us in the fall. There are greater subjects of universal interest which this association might very properly consider; these I will leave to you to define, and I hope the subjects you may hand in to our secretary between now and November next may be of such a nature as to make our meeting one of the most interesting that has yet been held by any trade organization.

E. A. Weegar, Norfolk, N. Y., dealer in Shelf and Heavy Hardware, Stoves and Tinware, and Tinners' and Plumbers' Supplies, has moved his business into new quarters in the Murphy & Crowley block, recently completed.

## THE BICYCLE INDUSTRY.

THE Census Bureau has completed the compilation of the returns of the bicycle and tricycle industry for 1900, which make a highly significant exhibit owing to the enormous development recorded in the decade between 1890 and 1900. The census of 1890 was the first at which the manufacture of bicycles and tricycles was returned as a separate industry. Previous to the decade ending with 1880 the manufacture of cycles was spasmodic and intermittent. In the censuses prior to 1890 the statistics of the manufacture of cycles were included with those for carriages and wagons. The comparative figures presented cover, therefore, only the period from 1890 to 1900. During this decade, taken as a whole, the industry made extraordinary progress, but the climax was reached about the middle of the period, and since then there has been a decided decline.

During the decade from 1890 to 1900 the number of establishments increased from 27 to 312, or 285; capital from $2,058,072 to $29,783,659, or $27,725,587; the number of wage earners from 1797 to 17,525, or 15,728; their wages from $982,014 to $8,189,817, or $7,207,803; miscellaneous expenses from $242,018 to $2,252,604, or $2,010,586; the cost of materials used from $718,848 to $16,792,051, or $16,073,203; and the value of products from $2,568,326 to $31,915,908, or $29,347,582.

The average capital, which in 1890 was $76,225, had in 1900 increased to $95,460. This increase in the average capital is a consequence of the prices at the end of the decade, when many of the smaller concerns were forced out of the business. It is to be noted that each of the 35 plants belonging to the American Bicycle Company reported as an individual establishment. The cost of materials used shows the largest percentage of increase. In 1890 it was $718,848, or 28 per cent. of the product, and in 1900 $16,792,051, or 52.6 per cent. Of this amount $16,161,638, or 96.2 per cent., was expended for principal materials, and $630,413, or 3.8 per cent., for fuel, freight, &c. This increase in the proportion between materials and product was largely caused by the keen competition among cycle manufacturers and the attendant decrease in prices of finished products.

At the close of the decade the manufacture of bicycles and tricycles was, as in 1890, almost entirely confined to the New England, Middle and Central divisions of States, but the relative location of the industry within those sections had undergone a considerable change. In 1890 the New England and Central divisions each had nine establishments, and the Middle division 8. In 1900 the New England States showed an increase of 46 establishments, giving them 17.6 per cent. of the aggregate for the United States; the Middle States an increase of 90 establishments, giving them 31.4 per cent. of the aggregate; the Central States an increase of 143, giving them 48.7 per cent. of the aggregate, and all other States an increase of 6, giving them 2.3 per cent. of the aggregate. In the New England States capital increased from $1,231,691 to $7,046,197, or $5,814,506, but its proportion of the aggregate decreased from 59.8 to 23.7 per cent.; in the Middle States it increased from $76,000 to $5,701,613, or $5,625,613, and its per cent. of the aggregate from 3.8 to 19.1; in the Central States it increased from $746,381 to $16,974,995, or $16,228,614, and its per cent. of the aggregate from 36.2 to 57. In the New England States the value of products increased from $1,150,142 to $6,567,292, or $5,417,150, but its per cent. of the aggregate decreased from 44.8 to 20.6; in the Middle States it increased from $125,916 to $6,517,665 or $6,391,749, and its per cent. of the aggregate from 4.9 to 20.4; in the Central States it increased from $1,276,268 to $18,675,701, or $17,399,433, and its per cent. of the aggregate from 49.7 to 58.5. In 1890 Massachusetts stood first among all the States, not only in number of establishments, but in the capital employed, and in the value of products. In 1900 New York reported the greatest number of establishments, while Illinois ranked first in capital and products, reporting 25.8 per cent. of the aggregate capital and 28.1 per cent. of the aggregate value of products.

Among the New England States Connecticut in 1900 stood first in capital. Capital in Massachusetts increased from $1,202,691 to $2,646,498, or $1,443,807. The value of products in Massachusetts increased from $998,342 to $2,715,310, or $1,716,968. In 1890, however, the products reported for Massachusetts constituted 38.9 per cent. of the aggregate for the United States, but in 1900 only 8.5 per cent. Among the Middle States New York retained its position as first; its capital increased from $44,700 to $3,326,943, or $3,282,243, and in 1900 constituted 11.2 per cent. of the aggregate; in value of products the increase was from $85,786 to $3,842,020, or $3,756,234, placing the State in third position with 12 per cent. of the aggregate. In Pennsylvania capital increased from $30,100 to $1,550,957, or $1,520,857, and was 5.2 per cent. of the aggregate in 1900, and the value of products increased from $32,630 to $1,855,043, or $1,822,413, and constituted 5.8 per cent. of the aggregate. Among the Central States Illinois retained its position as first in the division and became first among all the States in capital and in value of products, the increase in capital being $7,129,046 and in value of products $7,990,421. The capital in 1900 constituted 25.8 per cent. of the aggregate and the products 28.1 per cent. This latter percentage was, however, a decrease from 1890, when Illinois produced 37.8 per cent. of the total for the United States. In 1900 Ohio stood second among the Central States, with an increase of $3,956,376 in capital and of $3,978,472 in value of products. The total value of products in Ohio was $4,099,980, placing the State in that respect second among all the States. The third place in the Central States, and the fourth place among all the States, was occupied by Wisconsin, where in 1890 the industry did not exist. In 1900 23 establishments, with a capital of $2,337,975, reported products to the value of $2,795,236, or 8.8 per cent. of the aggregate for the United States. Indiana showed a considerable change; capital increased from $58,650 to $2,061,560, or $2,002,910, and value of products from $180,000 to $2,115,901, or $1,935,901.

The total number of vehicles manufactured was 1,209,016, of which 1,182,850, or 97.8 per cent., were bicycles. The census year 1900 was one of the first in which the chainless bicycle was produced in any considerable quantity, 42,929 being manufactured. Very few tandems were manufactured, constituting only three-tenths of 1 per cent. of the total number, and only 159 motor cycles. Fifty-six automobiles were manufactured in cycle factories. The number of tricycles was 26,110, or 2.2 per cent. of the total. The average price of chain bicycles at the factories was $18.91; chainless, $45.59; tandems, $57.85, and motors, $207.23. Most of the tricycles were children's toys, which accounts for their very low average price. In value the chain bicycles constituted 90.2 per cent. of the total; the chainless, 8.2 per cent.; the tandems, nine-tenths of 1 per cent., and the motors, one-tenth of 1 per cent. The value of the tricycles was only three-tenths of 1 per cent. of the total and of the automobiles three tenths of 1 per cent. There were produced in cycle factories, in addition to vehicles, other products to the value of $9,646,875, or 30.2 per cent. of the total for the industry. These "other products" considered chiefly of parts for bicycles, like chains, spokes, handle bars, saddles, rims, &c. In the beginning of the industry the larger establishments made nearly all the different parts of bicycles they required, but of late factories have more and more specialized their output, and now even some of the largest bicycle manufacturers merely buy the majority of the different parts and assemble them. The American Bicycle Company, controlling the majority of the output, is an example. Certain parts of its machines are manufactured in those of its factories best adapted for the purpose and set to other plants to be assembled. This procedure greatly economizes the cost of manufacture.

In addition to the bicycles here reported, there was undoubtedly a considerable number manufactured by the 6382 establishments classified as bicycle and tricycle repair shops, but as the value of their product was not reported in detail, but only the gross sum received for custom work and repairing, statistics as to the number of cycles manufactured by them are not available. The value of custom work and repairing in these estab-

lishments aggregated the large amount of $13,766,033, which should be taken into consideration in connection with the value of products of the manufacture of bicycles and tricycles.

During the census year 1900 only a few motor bicycles were manufactured, and it is too early to speak of the development of this branch of the industry. The price of such machines has been considerably reduced during the last two years.

The evolution of the bicycle industry can be gauged to some extent by the number of patents issued. Since the establishment of the United States Patent Office 7573 patents have been granted for cycles and their component parts. Of these only 16 had been granted before January 1, 1865, and the great majority were issued after 1890. The first patent issued was to J. B. Bolton, September 29, 1804, for a vehicle driven by a hand worked toothed gear; the others issued previous to 1865 mostly covered toys. In 1892 the number of applications for improvements in cycles increased at such a rate that a special division for their examination was established in the Patent Office. Patents of the velocipede class are divided into five groups, as follows: Unicycles, bicycles, dicycles, epicycles and polycycles. All patents in this class must refer to velocipedes propelled by hand or foot, or to parts of such vehicles. Wheels and their component parts, such as hubs, spokes, rims and tires are not, however, included in this class, but with carriage and wagon wheels.

The following statement shows the number of patents that have been granted on all parts entering into the construction of cycles (the miscellaneous item including clamps, rests, casings, mud guards, &c.): Unicycles, 46; epicycles, 32; dicycles, 38; bicycle propulsion, 1326; polycycle propulsion, 718; frames, 831; pneumatic tires, 764; cushion and solid tires, 652; saddles, 514; brakes, 451; handlebars and handles, 448; wheels, spokes, rims and hubs, 358; pedals and toe clips, 223; bearings, 133; miscellaneous, 1039; total, 7573.

From this statement it appears that 2044 different devices for cycle propulsion have been patented, 1416 for rubber tires, 831 for frames, 514 for saddles and 451 for brakes. Unicycle is a velocipede with only one wheel; dicycle is one where two wheels are placed side by side and polycycle is one having three or more wheels placed in such a manner as to furnish a stable support. The epicycle is a vehicle very seldom seen in public. It is a portable annular track propelled by a traction wheel on the inside. The rider is seated inside the wheel in such a position that the center of gravity is a little below the axis of the annulus. The number of patents applied for during the last two years has been considerably reduced.

The following tabular statement, taken from the reports of the United States Treasury Department, shows the exports and imports of cycle and parts thereof for the last five years of the decade. Prior to 1896 there was no separate classification for this industry, its statistics being included either with carriages and wagons, or with manufactures of iron and steel.

| Fiscal year. | Imports. | Exports. |
|---|---|---|
| 1896 | $56,960 | $1,898,012 |
| 1897 | 21,122 | 7,005,323 |
| 1898 | 4,845 | 6,846,529 |
| 1899 | 4,577 | 5,753,880 |
| 1900 | 3,516 | 3,553,149 |

Almost the entire demand for bicycles in the United States and many foreign countries was, until recent years, supplied from England, but American bicycle manufacturers have had the satisfaction of reversing trade conditions, and now the United States is supplying bicycles not only to England but also to all other parts of the world.

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W. M. PRATT, treasurer of the Goodell-Pratt Company, Greenfield, Mass., will sail for Europe on July 16 on the steamer "St. Paul." Mr. Pratt, who read a very interesting and able paper on the probable effects of mercantile consolidations at the recent meeting of the American Hardware Manufacturers' Association at Atlantic City, will be absent about two months. He may be communicated with on the other side care of the Carleton Hotel, Trafalgar Square, London.

## THOMAS McCRACKEN MEMORIAL.

THE following memorial on the death of Thomas McCracken, late secretary of the Minnesota Retail Hardware Association, has been prepared by a committee consisting of A. T. Stebbins, Chas. F. Ladner and J. F. McGuire, appointed for this purpose by the president of the association:

Thomas McCracken was elected secretary of the Minnesota Retail Hardware Association when our association was in its experimental stage, and served it faithfully and well until his death.

By his zeal and untiring efforts the association has successfully passed the experimental stage, and is today the peer of all like organizations.

Our hearts are filled with sorrow when we realize that never again shall we have the pleasure of meeting him—either in his office or at our annual meetings—and also when we realize that our relations with him in the past, so profitable to us in many ways, are, and must be for all time, only sweet and pleasant memories.

With all this sadness, it is, nevertheless, pleasant to reflect on his life and character, and to know that we are placing upon the page of our records the name of one who commanded our respect and was worthy of our confidence. By his zealous labors in the interest of our organization, by his constant practice of the principles of honor and integrity, he has left us an example worthy of imitation, and has obtained a place in our hearts that time can never displace.

While mourning his loss to ourselves we do not forget his bereaved family, and do here extend to them our heartfelt sympathy in their bereavement, and the assurance that they will ever be held in kindly remembrance by reason of our friendship and esteem for him.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

Talbot, Brooks & Ayer have just been organized to do a jobbing and retail Hardware business at Portland, Maine. H. D. Brooks is president of the concern, F. C. Talbot, vice-president and general manager, and John P. Ayer, treasurer and clerk. Mr. Talbot and Mr. Brooks were formerly connected with the Edwards & Walker Company for a long period, the former for 20 years and the latter, as traveling salesman, for ten years. Mr. Ayer came to the same concern from Houghton, Clark & Co. when the latter business was bought out. The new company are now occupying a temporary office at 276 Middle street and will open their store about September 1. They will carry a full line of Builders' Hardware and Mill Supplies, and will be pleased to receive catalogues, price-lists, &c., from manufacturers.

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Geo. W. Arthur, in the Hardware, Mill Supply, Farming Implement and Buggy and Wagon business in St. Matthews, S. C., desires catalogues, price-lists, &c., relating to Light Hardware, Sporting Goods, Plumbing Supplies and House Furnishing Goods.

## JAMES H. MANN.

JAMES H. MANN, who has long been prominently identified with the Axe industry, has lately completed a plant at Lewistown, Pa., and is now admirably equipped to turn out promptly Chopping Axes of various kinds, both single and double bitted. One of his leading brands in the latter style is the Juniata. Mr. Mann has spent nearly 50 years of his life manufacturing Axes, and is reputed to be the oldest active Axe manufacturer in the United States. His many friends in the trade will wish him success in his enlarged enterprise.

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H. W. ELY, son of E. C. Ely, has bought the latter's Hardware specialty manufacturing business at Leona, Pa., and will continue it under the style of the E. C. Ely Company. H. W. Ely has been identified with this business for 15 years, and is thoroughly acquainted with its details. We are advised that the trade on these tools has steadily increased.

## TRADE ITEMS.

In our issue of the 19th ult., it was stated that the Hall-Robertson Hardware Company, a new corporation with a capital of $100,000, now at Fargo, N. D., would soon remove to Grand Forks. This statement was, however, erroneous, so far as their removal is concerned. The original intention was to open the business at Grand Forks, but Fargo was subsequently decided on. The company will do an exclusively wholesale business in Shelf Hardware, Tinware and Sporting and Athletic Goods.

The Sifter Stove Polish Company, Saginaw, Mich., has been organized with a capital of $100,000 and the following officers: J. S. Smart, president; L. C. Slade, vice-president, and Eugene McSweeney, secretary and treasurer. F. A. Smart is general manager. The company will put on the market a stove polish made from the pure graphite, the product of the United States Graphite Company. The stove polish will be marketed in a new and what will be, it is thought, a very popular manner, the polish being powdered and put in a sifter top box, so that it can be applied with very little labor and annoyance.

Henry Disston & Sons, Philadelphia, have been awarded two gold medals by the South Carolina Interstate and West Indian Exposition for the superior quality of material and workmanship of the Disston Saws and Tools. They also have received a diploma of merit for installation.

Louisville Shovel Company, Louisville, Conn., are doubling their capacity in view of the large orders with which they have been favored by the trade. As soon as the new machinery is installed the company advise us that they will have a capacity of 200 dozen Shovels per day, and will make a complete line of Plain and Hollow Back Shovels, Spades and Scoops.

Eugene C. Saul, 3 California street, San Francisco, is doing a manufacturers' agency business in Hardware and allied lines, covering the States of California, Oregon and Washington. Among other concerns Mr. Saul is now representing the American Valve Company, Clyde Cutlery Company, Piqua Handle Mfg. Company, Helwig Mfg. Company, Phenix Tube Company, Tower Mfg. Company, Barnes Mfg. Company, and Illinois Screw Company, and is intending to make arrangements with other manufacturers who desire representation on the Pacific Coast.

F. J. Wallace recently purchased the plant of Chapman Mfg. Company, Meriden, Conn., in which some alterations and improvements have been made, and we are advised that the manufacture of Dog Collars and General Saddlery Hardware will be resumed at once.

A. H. Funke, 98 Duane street, New York, is the sole representative of the Kelecom Gasoline Motor for automobile use. It is made in 5 and 7 horse-power, single cylinder, water cooled, and 9 and 11 horse-power double cylinder, water cooled. Deliveries are being promptly made. He is also representing four new styles of automobile Head Lights for the production and use of acetylene gas, all of which are solidly made of brass, and give a large volume of light..

The eighth annual picnic of the Chicago Retail Hardware Association is announced by Fred. Ruhling, secretary of the Picnic Committee, and will be held on Wednesday, July 16, at Palos Park. There will be a number of contests for prizes and it is proposed to have all dealers connected with the association close their stores on the eventful day. Palos Park is a delightful spot of rolling country, covered with a rich growth of grass. Swings, bowling alleys and other accessories will contribute to the enjoyment of those in attendance. All jobbers donating prizes for the different contests are to be favored with an advertisement in the programme.

Boston & Lockport Block Company, Boston, Mass., are issuing a neat and convenient blotter pad, which they will be pleased to send to any one in the trade applying for it.

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# NOTES ON FOREIGN TRADE.

## BRITISH LETTER.

Office of *The Iron Age*, Hastings House, Norfolk St., London, W. C.

### The Week's Hardware Market.

THE most important event in the Hardware market last week has been the announcement that an old established firm have called their creditors together. The difficulty is attributed to heavy losses in the River Plate, where the company have a large establishment and are compelled to keep up considerable stocks. About four years ago they were converted into a limited liability company, with a considerable accession of capital, but the amount was evidently insufficient to cover the deficit arising from previous unsuccessful trading. Among the general body of creditors there are few large claimants. Unfortunately the liquidation is likely to prove protracted and unsatisfactory, as the principal assets are stated to be in Buenos Ayres. This comes as an unpleasant reminder to Hardware exporters not to put all their eggs in one basket. The financial situation in the Argentine Republic is so kaleidoscopic in its character that it is almost impossible to follow it from day to day. None the less, as I have previously pointed out, there is always a brisk demand for Hardware and metal goods in the Argentine, but the question of credit is an exceedingly difficult and delicate one.

The protracted bad weather has had a serious influence upon all those interested in Garden Engines, Hose Fittings, Syringes and Garden Furniture generally. A week or two ago I noted a slight improvement in the building trade, but things have again gone back to the bad. A good demand is felt for Gas Stoves and Coal Ranges of the better class, and the Fender and Curb manufacturers are receiving good orders from the North of England. In the general brass foundry trade business is languid, but machine made brass goods are selling much better for export, and there is a constant request, particularly for export, for Stamped Hinges and Cabinet Handles. Tin plate workers report business fairly good, particularly for Traveling Trunks, Tea Trays, Coal Vases and Lanterns, but the trade in Toilet Sets, Dish Covers and heavy goods is poor. The use of fixed Enameled Baths is having a bad effect upon the trade in portable Baths. It is no uncommon thing now to find fixed Enameled Baths in the houses of the working classes. The sanitary requirements of the various town councils all point to the increasing use of the bathroom as an integral part of even artisans' houses, while it goes without saying that every new house built contains the fixed Bath. It is not surprising, therefore, that portable Baths, particularly for British use, are not in much request. Cycle manufacturers have reached the end of their season orders, and there is reason to fear that retailers are seriously overstocked. On export account New Zealand is still buying heavily and Australia is sending some good indents. There is a distinct lull in the South African trade, and it is now recognized that some time must elapse before the expected expansion takes place. India is buying fairly well, as are also other eastern centers. In Sheffield the Stove Grate manufacturers are well employed, but otherwise Sheffield is in a very sad way. The east end of Sheffield is at the present time actually poverty stricken; on a rough estimate there are 3000 persons in the Brightside quarter of Sheffield on the verge of starvation. This is due to the general depression in the heavy metal trades, but, of course, the effect is felt keenly upon the lighter lines of goods. A local relief fund has been opened, which shows how serious affairs are.

### The Month's Hardware Exports

During the month of May greatly increased quantities of Cutlery were shipped to South Africa, in anticipation of peace. The value reached £10,300, compared with £5831 in May, 1901, and £3563 in May, 1900. There was a marked improvement in German purchases of Cutlery, the comparative figures advancing from £1265 to £1724. Brazil also bought Cutlery more heavily last month. On the other hand several countries restricted their purchases, notably Russia, France, Argentine Republic, Australia and the United States, whose imports fell from £5852 to £4523. Exported Cutlery during May amounted to £57,080, compared with £56,208 in May last year. There was a marked upward movement during May in the exports of Unenumerated Hardware—an advance being recorded from £114,597 to £128,615. Germany, Holland, France, Spain, Brazil, South Africa and Canada were the main factors in this upward movement. There was also an increase of over £8000 in the month's exports of Implements and Tools. The month's exports of Galvanized Sheets entirely bear out my previous comments on this particular department of trade. In May, 1900, the value of exported Galvanized Sheets was £275,426; last month the figures advanced to £422,284. Needless to remark, South Africa accounts for it. The value of Galvanized Sheets sent there last month amounted to £90,726, compared with £29,690 in May, 1901, and £31,065 in May, 1900. Other heavy purchasers were Spain, Dutch East Indies (£7051), Mexico (£8091), Chile, Brazil, Argentine Republic (£43,243), Australia and New Zealand. May was a bumper month for the Tin Plate trade, the exports rising from £255,884 to £361,623. The countries contributing to this were: United States (advancing from £62,513 to £82,021), Germany, Holland, France, Portugal, Italy, Roumania, Brazil, Argentine, British East Indies and Australia. The heavy American purchases will be noted, especially as during the month Canada bought in diminished quantities.

### A Note on Brazil.

In the foregoing notes mention of Brazil is made more than once. It is not possible, and in any event it would be unwise, to generalize upon so large a country. A note upon the district of Pernambuco may possibly enable American exporters more vividly to realize the economic difficulties of the country. A glance at the exports of Pernambuco will show how much it depends upon sugar. The adjoining States of Ceará, Rio Grande de Norte, Parahyba and Alagôas are in the same posture. During the past year there has been a serious crisis in the sugar trade—so acute that its effects may be felt for some years. The result is that imports have fallen away to less than half the average of preceding years. The reasons are obvious. Importers cannot secure payments from the interior owing to the deplorable financial position of the sugar planter. Ever increasing taxation is a predisposing cause. The habits of the people do not tend to ameliorate harsh conditions, as they generally spend everything they earn from good crops and lay by nothing for evil days. Of course, overproduction of sugar and falling values have almost killed the agricultural and commercial life of the district. The total value of imports into the district of Pernambuco in 1901 exceeded $5,000,000. In the main this trade is shared between the United States, Great Britain, Germany, France and Austria-Hungary. The imports from the United States were valued at $1,400,000; from Great Britain, $1,200,000; from Germany, $760,000, and somewhat less from France and Austria-Hungary. The imports of copper and yellow metal reached $52,000 (Great Britain $20,000, Germany $11,000, France $6,300, United States $12,500); of Lead Pipes, Lead, Tin and Zinc, $22,000 (Great Britain $4,500, Germany $5000, France $4000, United States $8000); of iron and steel, $93,000 (Great Britain $45,000, Germany $18,000, France $14,000, United States $15,000); of Firearms and Ammunition, $14,000 (Great Britain $4750, Germany $2250, United States $5900); of Cutlery, $28,000 (Great Britain $11,000, Germany $6500, France $2800, United States $7500).

### Americans All There.

I remember about two years ago transmitting to *The Iron Age* the gist of a circular letter from an annoyed Englishman, in which strong complaint was made of the dominating influence of Americans in the mining districts of South Africa. Another similar communication comes from a Sheffield gentlemen in South Africa, who writes:

"As a Sheffielder, and taking a keen interest in all that concerns the commercial success of Sheffield, I take the liberty of drawing the attention of Sheffield manufacturers to the necessity of pushing their wares in South Africa in the most energetic manner, in view of the gigantic efforts to capture the trade of this country being made by America. These efforts of the American manufacturers are also seconded in a manner not generally known. A good number of mine managers and chief engineers on the Rand are Americans, and, naturally, they show a predilection for American machinery, tools, &c., and whenever possible give a preference to American agents over English agents. Now, on the property where the writer is engaged the general manager, consulting engineer, master mechanic and battery manager are all Americans, and, unpalatable though it be, yet it is nevertheless true that the American element in the chief positions on the mines is becoming very pronounced. One of the gentlemen mentioned informed the writer that just before leaving New York an agent of one of the large steel companies in the States announced that his company had practically a whole cargo of steel of various descriptions lying off one of the coast ports of this country, but which they were unable to get discharged owing to the congestion existing at all the South African ports. The invasion by Americans and the huge amount of business which is certain to take place on the cessation of hostilities makes it abundantly clear that they intend to secure a large portion of that business—that is, if 'hustle' will do anything."

### Hardware in Constantinople.

As I am a firm believer that before many years elapse Americans will be doing a greatly increased trade with the Levant and Eastern Europe generally, I make no apology for directing attention to the possibilities and difficulties of trading with Constantinople. But first taking the trade of Turkey as a whole, the following average figures indicate the countries from which the Ottoman Empire purchases its requirements:

| | Value. | |
|---|---|---|
| | 1896-1900 (average of five years). | 1900. |
| United Kingdom | £5,701,000 | £5,146,000 |
| Austria-Hungary | 2,430,750 | 2,672,040 |
| France | 1,887,000 | 1,990,000 |
| Germany | 1,629,250 | 1,718,900 |
| Italy | 1,344,000 | 1,486,000 |
| Russia | 1,521,000 | 1,941,900 |

Germany is a strong competitor in all Hardware and Metal Goods. The following notes may help American exporters to an understanding of the strength of German trade in Turkey. In 1900 the German exports to Turkey of Iron and Iron Ware reached 2431 tons, valued at $460,000. This figure shows a marked increase on the preceding year. Copper and Copper Ware, 397 tons, valued at $290,000, a big drop to about half of the average of the three preceding years. Hardware, 196 tons, valued at over $500,000. This trade has nearly doubled in value since 1897. The Germans have of recent years resolutely set themselves to the task of capturing Turkish trade. Those interested should obtain a copy of a book by Dr. J. Krauss, entitled "Deutsch-Turkische Handelsbeziehungën, published at Jena last year. In this book will be found a study of the "Deutsche Levante-Linie," with its system of through rates from inland German towns to Turkey, a system inaugurated in 1890 by an agreement between that steamship line and the German State Railways. The results are startling. In 1890 Turkish imports from Hamburg were only $330,000; in 1898 the figures had risen to $2,600,000. But Hamburg bought from, as well as sold to, Turkey, and as a result of this through freight system Turkish exports to Hamburg have practically doubled. Is there any association of American exporters and shippers who can better this admirable German instruction? Adverting now to the trade of Constantinople, it may be said that the Armenian persecutions have had a serious adverse influence upon its trade. The police restrictions placed upon Armenian merchants have been so harassing that many have gone elsewhere. To this has to be added the increased charges levied on trade by the Constantinople Quay Company, as also numerous irritating obstacles made by customs officials upon goods in transit through Constantinople. The result is that the city as a distributing center is not what it once was. Buyers who once came to Constantinople from Smyrna and Trebizond now do business direct.

The best and practically the only way to capture Turkish trade is by personal solicitation and by carrying a stock in Constantinople. Business by agency is unsatisfactory, mainly because, in the peculiar circumstances of Turkish trade tradition and custom, trickery and chicanery are only too rampant. A substantial trading company with a stock of goods has nothing to fear.

## AUSTRALIAN NOTES.

FROM OUR SPECIAL CORRESPONDENT.

THE Hardware trade during the month of May can be set down as distinctly dull in all its branches, and the outlook for trade in the immediate future is thoroughly discouraging.

The exports of wool, &c., have ceased for the season and over sea shipping trade is quiet. The long continued drought in the other States (for Victoria has suffered least of all in this respect, due to its geographical position) is having far reaching effect, and while it continues it restricts trade in every direction. One of our principal public men, Sir William McMillan, whose utterances are to be largely depended upon, estimates the cost of the drought to Australia at not less than £130,000,000. It is now about seven years since some of the more remote parts of Queensland and New South Wales had anything approaching a decent season's rain fall. It is calculated that at least a couple of wet seasons would be necessary to restore the country to normal value. Implement makers, engineers and foundrymen are consequently experiencing very dull times and dismissing hands.

Stock taking is commencing in the various Hardware houses, and the half yearly balances on June 30 will not yield any satisfaction out of the ordinary. The mining industry is not flourishing, nor the immediate outlook particularly cheerful.

The apparently close termination of the South African war is having the effect of creating a big exodus from Australia to the Transvaal. The most regrettable feature of this emigration is the fact that the emigrants are chiefly of the class who form the backbone of the country. Farmers, artisans and skilled laborers of every class crowd all the South African steamers. The "Persie," which left May 30, took over 300 of them, and every steamer takes her full complement. None of these passengers are permitted to book until they have produced for Government inspection satisfactory evidence that they are possessed of at least £100 in cash with which to land in South Africa. The above instances the deplorable state of trade out here, and the outlook is for a few lean years before we get fat ones.

The State Governments have no money to spend on public works at present, and retrenchment is the order of the day in all Government departments.

The colony of New Zealand, according to advices, is having a fairly prosperous season, and in the little island State of Tasmania business is on a healthy basis. It is on the Australian continent and chiefly outside the State of Victoria that the drought has been so disastrous.

The exodus from this last named State is chiefly the result of over legislation, restricting individual liberty by absurd laws regulating too strictly the hours of labor, wages, number of hands, &c.—everything, in fact, except selling price.

The recent advance in freights from New York is felt in the higher cost of goods, especially the cheap and bulky lines. We note Fencing Wire is cut at 17 shillings 6 pence for English ton, as a check on English and German competition.

Electric lighting is proceeding apace in all parts of Australia and supplies are in good demand. A big field is open and is being judiciously exploited in electric traction.

### Tariff Matters

drag their slow length along and there is every promise of a prolonged game of battledore and shuttlecock between the Upper and Lower House on various items. The Federal Parliament has wasted 14 weary months of half useless talk in settling the fiscal policy for 4,000,000 of people and the end is far from sight. Amendments and discussions come along in wearisome detail to be again amended and again considered. A healthy volcanic eruption, with its sole object the destruction of Australia's 14 Parliaments would be a national godsend, and the country could run itself easily for the next ten years.

## MISCELLANEOUS NOTES.

### Enameled Washboards.

The American Washboard Company, Cleveland, Ohio, are putting on the market No. 177 White Swan enamel, also No. 178 Blue Jay enamel washboards. It is stated that the No. 177 is the only white enamel washboard on the market. The glass washboards which the company manufacture are referred to as having a large sale, while the enamel boards also are in good demand.

### Cream Separator.

D. H. Burrell & Co., Little Falls, N. Y., beginning February 1, 1903, will offer to the trade an improved cream separator, based on an important invention of which they obtained control some years ago, but which they were unable to put on the market on account of some other patents which stood in the way but are about to expire. This cream separator, which will be known as the Simplex link blade separator, is referred to as a distinctive advance in this line of industry.

### Fairfield Lawn Swing.

The Fairfield Lawn Swing Company, Brunswick, Maine, manufacturers of lawn swings, lawn chairs, settees, &c., issue a pamphlet particularly devoted to the Fairfield lawn swing, which device has been on the market several seasons and is largely handled by the hardware trade. In referring to the swing the manufacturers state that it is built on the best mechanical principles; combines the maximum of strength with the minimum of weight, and that it is safe and durable. Its lightness makes it easy to handle and its construction renders it easy to operate. The swing is equally adapted for old and young, and is attractive in appearance.

### Never-Rust Compound.

George Borgfeldt & Co., 48-50 West Fourth street, New York, have put on the market a high grade rust preventive, the trade name of which is "Never-Rust." This material is really a slushing compound, the valuable characteristics of which, according to the manufacturers, are that it never gums, gets rancid or hard; contains no acid; is always odorless and easily applied. It is made in six grades, three of liquid and three of paste, varying in density through gradations of light, medium and heavy, in both forms, so as to meet many diverse requirements. In the mass it is of an orange tint, but applied to bright metal is almost transparent. It can be put on with a brush or cloth, and easily removed after it has performed its mission without any cutting agents, as is required for the removal of white lead and tallow or similar compounds, leaving the surface in its original condition even after long exposure to the elements. This compound is now being used by many prominent manufacturers for protecting machinery and numerous other manufactures of steel and iron in transit. Piano makers use it on the key heads and strings for instruments exported. The gun and pistol makers swab the barrels and other parts, and it is also used on all kinds of light and heavy machinery, hardware articles, &c. A coat of Never-Rust is said to be more effective than a thick coat of grease, petroleum or tallow combination; always leaves the steel bright; dampness has no effect on it, and the sun does not remove it. The claim is made of greater economy, because of the larger surface covered effectively, the thin coating also catching and holding less dust and grit than a larger volume of material. It is put up in barrels of about 360 pounds; half barrels, 200 popnds, and cans holding variously 50, 25, 10 and 5 pounds. Samples will be mailed gratuitously for the asking, no charge being made for packing when regularly ordered in commercial quantities.

### Harrington & Richardson Arms Company.

The automatic ejecting and nonejecting single guns manufactured by the Harrington & Richardson Arms Company of Worcester, Mass., are now supplied in 20 gauge with 28 or 30 inch steel barrels, in addition to 12 and 16 gauge, in which they were formerly made. This line of guns is furnished with fine walnut stocks and hard rubber butt plates.

### The New Climax Bi-Treadle Grinder.

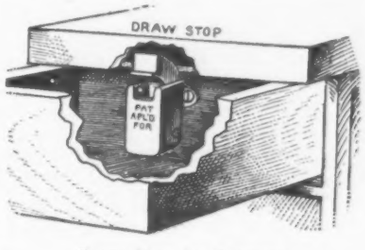
The new Climax bi-treadle grinder, shown herewith, is made by Schofield & Co., Freeport, Ill. The motive power used may be varied by changing the belt from the balance wheel to a pulley. The crank shaft bearing is adjustable on the center post, so the belts can thereby

*The New Climax Bi-Treadle Grinder.*

be tightened. All bearings are fitted with dust proof oil cups. The rest support is adjustable to any position on the center post, or can be taken off instantly if desired to leave the space about the wheel clear for convenience in polishing or buffing. The bearings for both mandrel and crank shaft are long pipe bearings and accurately fitted so the machine runs with the least possible friction.

### Draw Stop for Drawers.

The accompanying cut shows a draw stop, put on the market by A. E. Faber, Jr., 355 Mulberry street, Newark, N. J. The illustration is broken away to show the manner of attaching the stop to the inside of the back board of a drawer, to prevent it being drawn entirely out and falling on the floor. The pivoted pawl is




*Draw Stop for Drawers.*

actuated by a spring, so as to allow it to catch in an under cut in the lower side of the board above. If there is a strip above the drawer it is not necessary to make the under cut. The stop may be used on drawers in counters, shelving, furniture, desks, &c. If it is desired to take the drawer entirely out it may be partly opened and the pawl depressed. The stops are finished in copper and are referred to as comparatively inexpensive.

## Adjustable Sliding Ladder.

McCabe Hanger Mfg. Company, 532-542 West Twenty-second street, New York, manufacturers of hangers and track for all conditions of doors, are also manufacturing the Adjustable sliding ladder for stores,

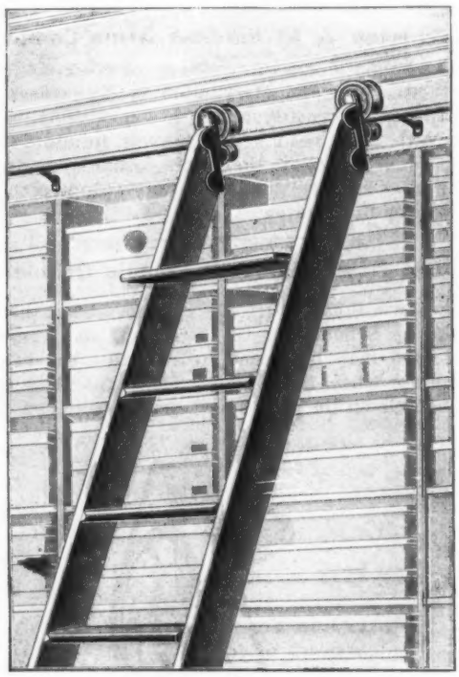


*Fig. 1.—Adjustable Sliding Ladder.*

libraries and any interiors where such a ladder is necessary. Fig. 1 shows the upper portion of the ladder, which consists of an upper and lower grooved wheel, sliding on a 1¼-inch polished oak guide pole or track bracketed to the shelving. The construction of this at-

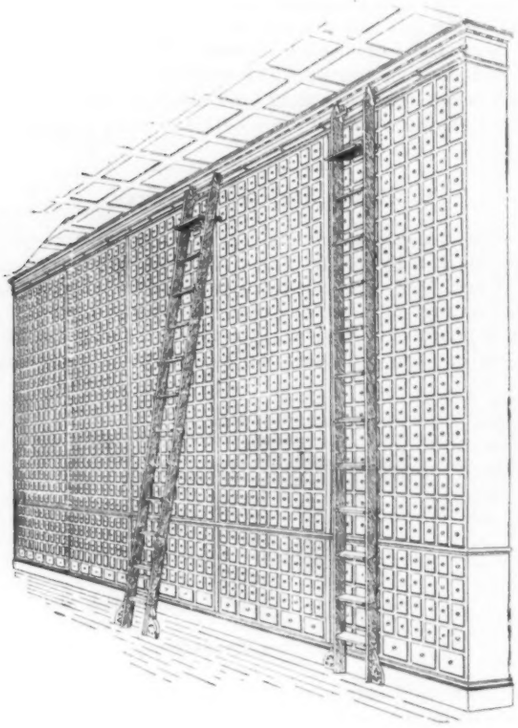
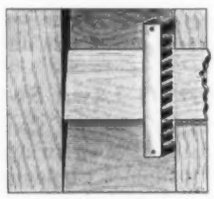


*Fig. 2.—Showing Ladder in Vertical or Slanting Position.*

tachment is such that there is a sliding motion of 4 inches. One part of each attachment is secured to the ladder side, while the other moves up and down as occasion demands, both surfaces being machined to work easily and noiselessly. By this method the ladder is held securely to the track between the two sets of upper wheels, so that it can be used at an angle with the shelving, as is customary, or, when not in use, pushed against the front of the shelving out of the way, as seen in Fig. 2. The bottom attachment consists of two ornamental fixtures (screwed to the outsides of the ladder), the extreme dimensions of which are 6 x 9 x 1⅛ inches, inside of each of which is a rubber tired wheel, 5 inches in diameter, on which the ladder rolls. All of the metal parts are aluminum finished. The company make a specialty of manufacturing the metallic portions for ladder makers, &c., but also furnish ladders complete, as shown in the illustrations, using best selected ash and oak. The steps are let into the sides and fastened together with long screws, no nails whatever being used in the ladder's construction. The ladders can be finished to match any color wood work without extra cost. The point is made by the manufacturers that as all the weight is on the floor the ladder can be used in connection with shelving of the lightest construction.

## The Smith Clapboard Marker.

Otis A. Smith, Rockfall, Conn., is putting on the market the clapboard marker shown in the illustration herewith. It is made of one piece of sheet steel, with serrated sides bent at right angles, which allows the marker to adjust itself to uneven surfaces caused by the siding becoming warped by exposure to the weather while applying. This feature, it is pointed out, is impossible with a rigid marker. The serrated edge also acts as a



*The Smith Clapboard Marker.*

guide bearing, keeping the marking edge at right angles to the face of the board when in operation. On each end of the marker is a guide for the casing. At each end is also a hole through which a cord may be passed, and the marker suspended from the workman's neck. The marker being made from one piece of steel, it is remarked, is light and economical in cost.

## Leather Head Chisel Handles.

The Piqua Handle & Mfg. Company, Piqua, Ohio, are offering leather head chisel handles, as shown herewith. They are made from selected maple, hickory and applewood, well seasoned, and are of an attractive pattern,

*Leather Head Chisel Handles.*

which, it is pointed out, is a desirable feature. The ferrules on the tang firmer applewood and hickory handles are of heavy wrought brass, and on the maple handles of seamless brass. The leather heads are made of two or three layers (according to the thickness of the leather) of good quality sole leather. The company also make socket framing chisel handles of the same quality.

## Parallel Swivel Vise.

Merrill Brothers, Kent avenue and South Eleventh street, Brooklyn, N. Y., have recently put on the market an improved form of their vise, as here illustrated, which in its original form they have been manufacturing for 30 years. What they claim for this vise as

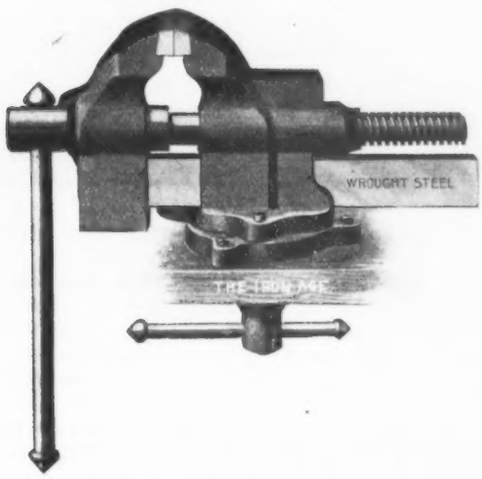



*Fig. 1.—Wrought Bar Parallel Swivel Vise.*

now made is that it cannot be broken by any use or abuse that a vise is subjected to, and that it is especially suitable for chipping. The vise swings on a large washer bolted to a bench, so that it can be turned to

*Fig. 2.—Sectional View of Back Jaw.*

any position and securely held there by the bottom screw and the pin through the lug on either side of the base. The parts of the vise which their extended experience has shown to be the most subject to strain

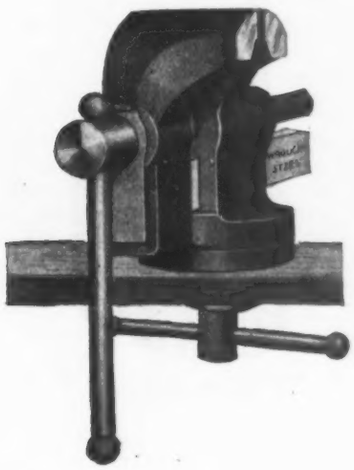


*Fig. 3.—Same Vise with Offset Jaw.*

have been greatly reinforced. A bar of wrought steel is machined perfectly square on the parallel sides so as to make a close fit, and is well fitted into the pocket in the back jaw. The plain part of the screw extends well back in the jaw, which enables the vise to be opened far enough for ordinary use before the thread is exposed. The screw is large in diameter, with a strong square thread accurately fitted into the back jaw, the threaded portion (or nut) being as long as the jaws are wide. The jaws are extra heavy and faced with carefully tempered tool steel pieces, which can be easily replaced in the event of wear or injury. Fig. 2 is a sectional view of one-half of the back portion of the vise. Fig. 3 is an illustration of the vise made in the same sizes and of the same dimensions and of the same general character, except that it has an offset jaw, which is made flush on one side and overhangs on the other, as shown in the cut. This is intended for shops where it is desirable to grip irregular shapes or hold bars or rods vertically. The lever of the size having a jaw 6½ inches wide, which is a leading size, is 17 inches long. These vises are made in four sizes, with jaws 4, 5, 6½ and 8 inches wide; opening 8, 9, 10 and 12 inches, the weight of the sizes in the order named having been increased to meet more exacting requirements, to 70, 94, 141 and 212 pounds, from 65, 80, 125 and 165 pounds each. The diameter of the screw is 1⅛ inches for 4-inch, 1⅜ for 5-inch and 1⅝ inches for the two larger sizes.

## The Sellmore Air Tight Wood Heater.

The accompanying cut shows an air tight wood heater which is referred to as a radical departure in construction. In the broken view of the heater given in the illustration the course of the air currents and products of

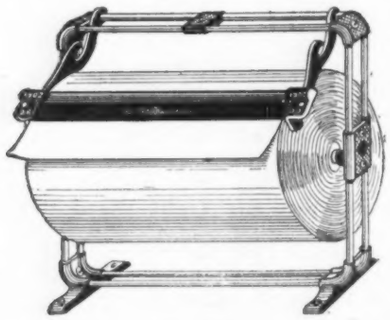
*The Sellmore Air Tight Wood Heater.*

combustion is indicated. The stove is said to possess all the principles and good features of a down draft, hot blast, base heating air tight, and is so constructed that every square inch forms a radiating surface. The draft regulators are ornamental sliding plates connected with air shafts through which the cold air is forced into the stove. An open damper gives an ordinary air tight stove with direct draft up the chimney, while with a closed damper the course of the products of cumbustion is toward the front of the stove over the partition, as shown in the illustration, then down along the bottom of the stove, from whence they ascend to the smoke pipe, and escape to the chimney. Norvell-Shapleigh Hardware Company, St. Louis, are the exclusive selling agents for this heater. In the territory covered by their traveling men, the dealer in each town is selected by them and appointed as sole agent in the town for the heater. In cities more than one dealer may be ap-

pointed. In localities not covered by their traveling representatives the company are desirous of interesting jobbers, giving them the control of territory. The company have small models of the heater, one of which they will be pleased to send to dealers who are interested or desirous of undertaking to make sales.

## The 1902 Steel Framed Roll Paper Holder and Cutter.

The West Supply Company, Columbus, Ohio, have added to their line of paper holders and cutters the one shown herewith. It is constructed of two oblong ¼-inch round coppered steel frames. The feet clamp the frames at and around each lower corner, while the upper corners of the frames are likewise clamped by a neat

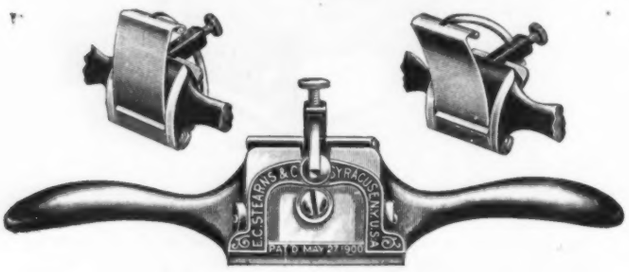


*The 1902 Steel Framed Roll Paper Holder and Cutter.*

quarter-round casting. Added to these are the iron clamps in the center of the upright parts of the frame. The inner part of these have U-shaped projections to support the wooden rollers. The manufacturers claim that the holder and cutter will bear one hundred fold the weight it will ever be called on to support without producing the least strain. They refer to its great strength and lightness as making it a very desirable cutter for the trade. In addition to the form shown in the cut, the devices are made in pyramids of two cutters, one above the other, also in combination form with a 6-inch and a 9-inch cutter on the bottom and a 12-inch cutter on the top.

## Stearns' Universal Spoke Shave.

The spoke shave shown in the accompanying cut is referred to as unique in that it will cut equally well on flat, concave or convex surfaces. It is adapted, it is

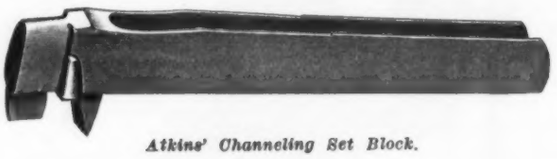



*Stearns' Universal Spoke Shave.*

explained, to all work which can be done with an ordinary spoke shave, and its flexible spring bottom allows it to cut on the inside or outside of a circle in the same manner as a spring bottom circle plane. The shave is made with a curved cap on the knife in order to prevent the shavings getting between the knife and cap and thus clogging the tool. It also permits, it is stated, first-class work on cross grained wood. The tool has an adjustable throat, and the cut can be regulated by the adjusting screw. There is an absence of loose pieces to remove or to put on when a change is made in the character of the work, it being only necessary, it is pointed out, to loosen the screw on the curved bar, springing the flexible bottom to the desired curve and holding it there by tightening the screw, as shown in the small cuts. In doing straight work the flexible spring bottom is left flat. The tool is manufactured by E. C. Stearns & Co., Syracuse, N. Y.

## Atkins' Channeling Set Block.

The accompanying cut represents a set block for setting and channeling the cutting teeth of cross cut saws, to produce a more durable set and to relieve the



*Atkins' Channeling Set Block.*

friction on both sides of the teeth. The block can be used on a filing bench, or on any surface where the operator wishes to set saws. The teeth are set by a light blow over the apex, or high point of the bevel, where the tooth is drawn forward, so that the body of the tooth is over the convex point of the set. A light blow is struck on the tooth over the point of the anvil, to cause the tooth to spring down under the blow, producing a slight channel running lengthwise of the tooth. The set block is put on the market by E. C. Atkins & Co., Indianapolis, Ind., who state that it is made from extra quality drop forged tool steel and hardened, that it is unbreakable, that it will never wear out and that the advantage of this process of setting will soon be perceived in the cutting of the saw.

## Steel Pump Oilers.

The Noera Mfg. Company, Waterbury, Conn., have added to their line the steel pump oiler shown herewith. These oilers are made of steel throughout, copper plated,

*Steel Pump Oiler.*

and have a seamless steel cup bottom. The pump is in the side of the top, out of the way, while the can can be taken apart and the valves and pump inspected. The threads are of standard size, to permit nozzles to be changed to other lengths, and the hole in the end of the nozzles is made small, with room left to bore it out larger. The oilers are made in 1 and 1½ pint, also in 1 and 2 quart sizes. They are referred to as being particularly adapted to railroad use.